

MARCH 16, 1959

PURCHASING

The Methods and News Magazine for Industrial Buyers



Purchasing at Kaiser Aluminum

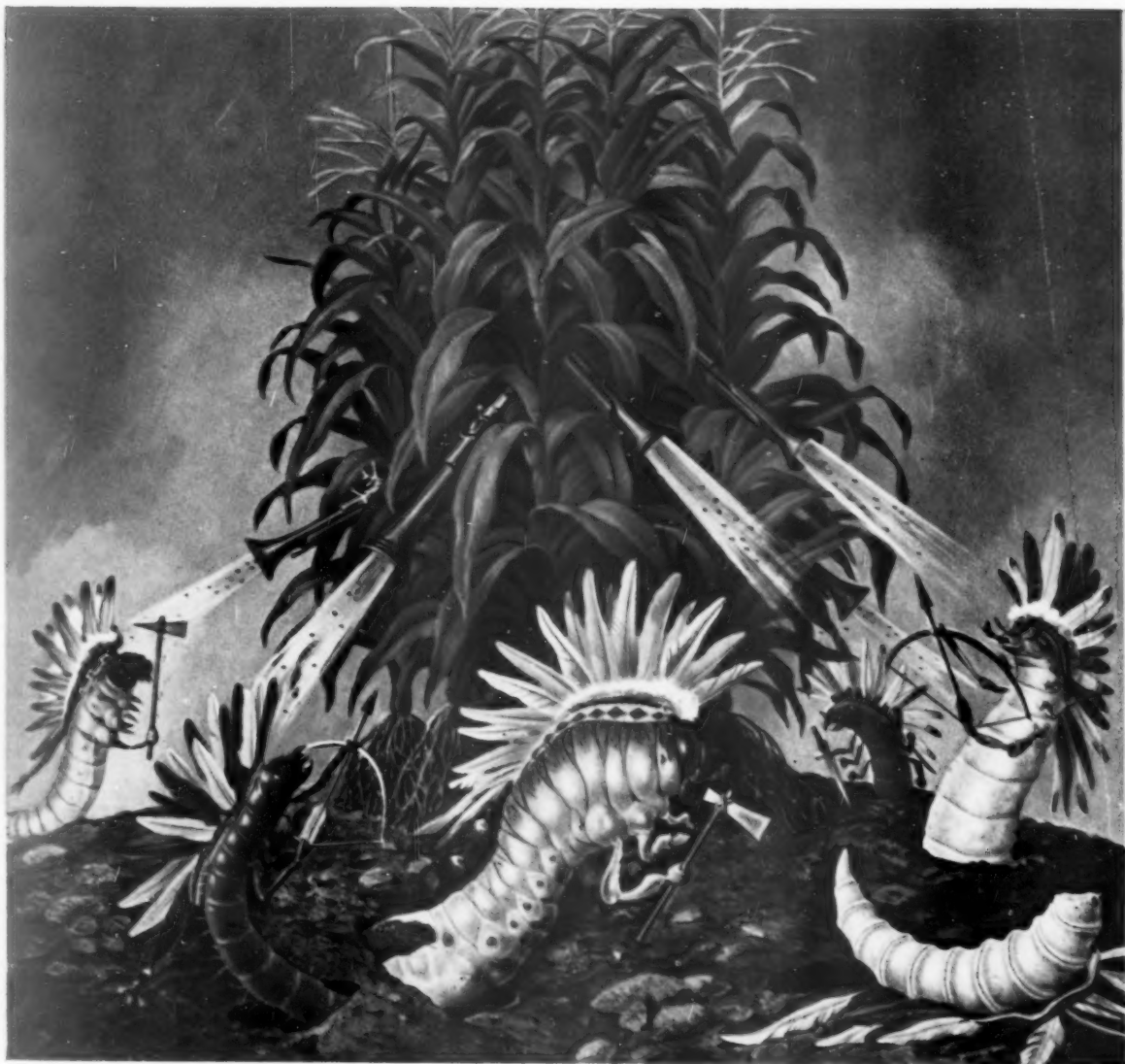
**Freedom of Action for P.A.'s
Cost Reductions in the Millions
Inventory Management
Choosing and Training Buyers
Start on page 73**

Plus features on:

Purchase Order Terms • Materials Management • Integrated Data Processing



Kaiser Aluminum's Duncan Gregg



A firm stand against the war party

ONCE a cornfield was helpless prey to marauding soil pests. But now they've met their match and more in Shell Chemical's insecticide, *aldrin*.

Applied before or during planting, aldrin kills such destructive soil insects as corn rootworms, wireworms, cutworms, seed corn maggots and white grubs whether they touch, taste, or breathe it. The result: pro-

TECTED feeder roots make bigger corn; cornstalks stand up against wind and storm. At harvest time they reach straight for the sky for efficient mechanical picking.

Providing "a firm stand" for corn and other crops by protecting roots from soil insects is one of the many ways Shell Chemical serves the farmer.

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

NEW YORK





**You can tell
the **SKF** man
by his complete line of bearings!**

Take just ball bearings, for example. He can offer you both single- and double-row deep groove ball bearings, angular contact, self-aligning and filling-slot types in thousands of sizes with any combination of shields, seals and snap rings.

The same goes for roller bearings—spheri-

cal, cylindrical and tapered—and for ball and roller thrust bearings, too. It's the most complete line available from any manufacturer.

And because he's backed by SKF's six high production plants, the SKF man can offer you fast delivery of the bearings in his line. How fast? Ask him for the details today.

5902



Spherical, Cylindrical, Ball, and *Tapered* Roller Bearings

EVERY TYPE—EVERY USE

SKF

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

REG. U. S. PAT. OFF.

NOW TESTS PROVE... CONTOUR-WELDED* STAINLESS TUBING IS SMOOTHER! *this greater smoothness provides... longer fatigue life*



Recent tests conducted on different types of full-finished tubing prove that TRENTWELD® tubing—made by the exclusive Contour-Weld* process—is smoother than tubing made by any other method of manufacture.

TRENTWELD IS SMOOTHER THAN SEAMLESS. The walls of welded tubing generally are smoother than the walls of seamless because welded tubing is formed from uniformly rolled strip steel whereas seamless is extruded from a billet. *The tests confirm this point of difference.*

TRENTWELD IS SMOOTHER THAN OTHER WELDED TUBING. These tests also confirm that TRENTWELD tubing is smoother than any other welded type thanks to Contour-Welding*, the welding process patented by Trent that virtually eliminates the weld bead.

WHY SURFACE SMOOTHNESS IS SO IMPORTANT. In still other tests, it has been proved that surface smoothness directly affects *fatigue life*—critical in hydraulic and other pressure applications... *corrosion resistance*—vital in strong chemical environments... *particle incrustation*—which must be eliminated to prevent product contamination.

So, next time you need stainless or high alloy tubing, be sure you specify TRENTWELD. It's also available in titanium, zirconium, Zircalloy and Hastelloy†, in sizes from 1/8 to 40 in. Meanwhile, why not get full details. Send today for the free, 50-page Trent Tubing Manual. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

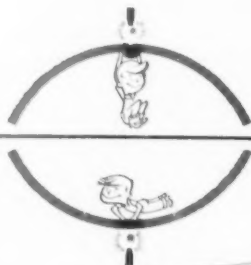
†Trademark of Haynes, Stellite Co.



greater corrosion resistance



less product incrustation



**CONTOUR
TRENTWELD**

WHAT CONVENTIONAL WELDING IS

In conventional welding of tubes, gravity pulls molten metal down inside the tubing to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.



WHAT CONTOUR TRENTWELD IS

With Contour-Welding the tube is welded at the bottom. Gravity still pulls the molten metal down, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

**Stainless and High Alloy
Pipe and Tubing**

TRENT TUBE COMPANY Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisconsin • MILLS: East Troy, Wisc.; Fullerton, Calif.

For More Information Write No. 155 on Inquiry Card—Page 32



SUCCESS STORIES

B.F. Goodrich distributors helped these customers cut costs. Can they help you?



Filling station for fire water

(See photo) In Rhode Island, a manufacturer of dyes and finishes for fine fabrics, uses strong sulphuric acid by the tankload. It's pumped from truck to storage tank through hose. But the acid is so strong and corrosive, it would eat its way through regular rubber hose. Metal tubing couldn't take the sharp angles or stand much bending.

When a B.F. Goodrich distributor heard of the problem, he recommended a new hose, specially developed by B.F. Goodrich for acid-handling service. The lining of this hose is made with a special compound, called "Hypalon," which stands those strong acids and chemicals that destroy ordinary rubber.

The B.F. Goodrich acid hose shown above has already lasted a year and a half, is still in excellent condition. It has put an end to the waste and danger of acid leaks, the cost of frequent hose replacements. It's lighter, easier to handle than the hose used previously; faster to hook up because of special attachments at the hose ends.

Ground trip

A brick manufacturer in Virginia uses a B.F. Goodrich Highseal conveyor belt to carry rejected raw bricks back to a pug mill to be ground up for re-use. An oil-resisting belt was needed because a certain amount of oil is added

to the clay. At first, the distributor questioned the use of Highseal because it was regarded as a lightweight belt for food handling only, but after a year passed, he reported it had outlasted the previous belt. Now after nearly four years of six-day-a-week service, the B.F. Goodrich belt is still in use and shows very little wear.

Rundown feeling

In Illinois, rubber suction hose, reinforced with wire, was being used to drain big pools of water that accumulate in an underground coal mine. But after being run over several times by heavy mining equipment, the hose was crushed flat, had to be replaced.

In 1953, the company switched to a different kind of water suction hose, developed by B.F. Goodrich. Instead of wire, this hose is reinforced with a continuous coil of hemp rope, buried in thick rubber, so it springs back to its round shape after being crushed. In spite of being run over countless times by shuttle cars and other equipment, this B.F. Goodrich hose lasts four times as long as the hose used before, saves the mine an estimated 75% in maintenance costs.

Smooth take-off

For many years an eastern gelatin manufacturer used cotton duck conveyor belts for "take-off" operations. Then

a B.F. Goodrich distributor sold the company a lightweight belt made of Koroseal flexible material. It worked so well that five more B.F. Goodrich Koroseal belts were installed recently. Distributor reports that these belts not only do a better job, but are also more economical.

Chute works

A mining company in Michigan recently ordered Grade 1172 rubber sheeting from a B.F. Goodrich distributor for lining slurry chutes. Choice was made after company had made a special test in which this rubber outlasted another material.

Face lifting

A manufacturer of television sets uses a lift truck with a carton clamp device to pick up boxed sets. To prevent slippage and damage to packages, a distributor suggested that the company use pieces of B.F. Goodrich Ribflex conveyor belting to cover the face plates of the clamp. The cover of this belting is made of parallel ribs of flexible rubber, which provide a good surface for gripping smooth boxes.

New product

Rubber dock bumpers: Tough rubber pads for use on all types of loading docks to protect trucks and platforms



from damage. Bumpers resist impact, abrasion, scuffing, weather. Two types: one all rubber, the other with a metal backing. Ask your B.F. Goodrich distributor for Information Bulletin 758-1.

For more information

For full information about any product described on this page, see your B.F. Goodrich distributor or write B.F. Goodrich Industrial Products Co., Dept. M-546, Akron 18, Ohio.

Koroseal—T. M. Reg. U. S. Pat. Off.

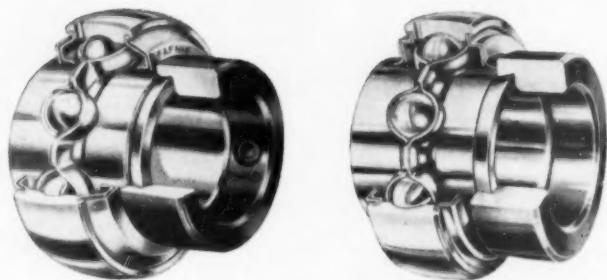
B.F. Goodrich
industrial
rubber products

Bearing Buying Guide

NO. 1



A REPORT ON FAFNIR BEARING DEVELOPMENTS AND DISTRIBUTION ACTIVITIES



CONTACT OR SLINGER TYPE SEAL ... EACH HAS A PURPOSE

Fafnir-originated Wide Inner Ring Ball Bearings are available with either Plya-Seals (contact type) or Mechani-Seals (slinger type). Each type seal is designed for a particular kind of service.

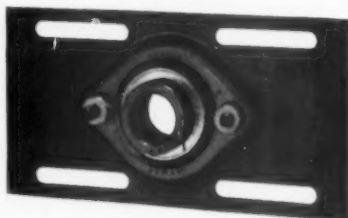
For machines with slow to moderate speeds operating in a dust or moisture-laden atmosphere, bearings with Plya-Seals offer positive protection against contaminants. Such bearings are practically impervious to dust, lint, dirt or moisture. Their flared lip seals of resilient Buna N rubber-coated fabric ride in firm contact with ground outside surface of inner ring. Flared lip seals will not push in. Wide Inner Ring Bearings with Plya-Seals are used extensively throughout the food processing, textile, air-conditioning, mining and farm equipment industries.

For machines with moderate to fast speeds calling for frictionless seals, bearings with Mechani-Seals (frictionless, slinger type) meet exacting requirements. Close running clearance between two "dished" steel plates assures effective sealing. Rotating outer plate integral with inner ring acts as slinger to throw off contaminants.

Fafnir-originated Wide Inner Ring Bearings with self-locking, cam-type collar are incorporated in all Fafnir ball bearing power transmission units and are used for machine applications as well. They are available in two general types, the rigid and self-aligning. Where seals are involved, the Mechani-Seal type is interchangeable with the Plya-Seal type... both types are factory-lubricated for life of bearing.

PRESSED STEEL TAKE-UP UNIT

This recent addition to the Fafnir Line of Power Transmission Units is a low-cost light-duty, pressed steel take-up unit, designed for adjustable shafts and belt tightening devices where extra weight and capacity are not needed. Available in two basic sizes covering eight different shaft dimensions from $1\frac{1}{16}$ " through $1\frac{1}{4}$ ", the new unit is adaptable to either guide-type or bolt-type methods of mounting. It can accommodate misalignment during take-up adjustment. The extended inner



ring type of bearing is equipped with Plya-Seals and the Fafnir originated self-locking collar. Pre-lubricated, the bearing needs no in-service attention.

FAFNIR

BALL BEARINGS

MOST COMPLETE LINE IN AMERICA

Branch Offices: Atlanta* • Baltimore • Boston (Cambridge)*
Charlotte* • Chicago* • Cincinnati • Cleveland • Dallas*
Denver* • Detroit* • Houston • Indianapolis • Kansas City*
Los Angeles* • Memphis* • Milwaukee • Minneapolis*
Moline • New Orleans (Metairie) • New York (Woodside)*
Philadelphia* • Pittsburgh* • Portland, Ore.* • Rochester
San Francisco (Millbrae)* • Seattle*

*Includes warehouses

For More Information Write No. 156 on Inquiry Card—Page 32



SERVICE IMPROVEMENTS

Within the past few years, The Fafnir Bearing Company has strengthened its customer services through larger branch office facilities, better warehouse facilities and new branch offices. In 1958, Fafnir's Moline, Ill., branch office operations were transferred to larger and more convenient offices... the Indianapolis branch office and warehouse were relocated in larger quarters... the San Francisco branch office and warehouse were shifted to a spacious new building in Millbrae... and the Dallas branch office and warehouse were relocated into a new modern one-story brick building (see illustration above). These moves are evidence of Fafnir's determination to provide the most extensive and efficient service possible to customers.

DECIMAL EQUIVALENT WALL CHART

If you have use for a decimal equivalent wall chart printed on plastic-coated paper, ask your Fafnir Representative. Chart measures 18" x 24". Figures are bold... easy to read at a glance. Simplifies job of converting from fractions to millimeters and decimal equivalents or vice versa. The Fafnir Bearing Company, New Britain, Connecticut.

PURCHASING

The Methods and News Magazine For Industrial Buyers

MARCH 16, 1959
VOLUME 46, No. 6

B. P. MAST
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B. P. MAST, JR.
President

RAY RICHARDS
Publisher

Purchasing Previews	
Straws in the Trade Winds	7
Purchasing Opinion Poll	11
Special Industry Report: Packaging	15
Washington Report	23
Editorial: The Lions Lie Down With the Lambs	71
Purchasing at Kaiser Aluminum	73
Plant P. A.'s Have Freedom of Action	76
Cost Reduction: Who Sets the Target?	80
Purchasing's Part in Inventory Management	82
Company Careers Start in Purchasing	84
Purchasing Men Strongly Support New Procurement Bill	87
IDP: More Paperwork—Lower Costs	88
How to Sell Your Company on Materials Management	90
Should Purchasing Costs Vary With Sales Volume?	92
How Much Fine Print Does Your P. O. Need?	95
Value Analysis Tips on Die Castings	100

REGULAR FEATURES

Highlights of This Issue	69
Information for Your Catalog Files	47
Letters to the Editor	52
Purchasing People	61
F.O.B.	64
Products and Ideas	100
Office Equipment and Supplies	142
Association News	150
Book Review	162
Employment Service	170
Index to Advertisers	172

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CONOVER-MAST PUBLICATIONS, INC.
EDITORIAL AND EXECUTIVE OFFICES
205 East 42nd Street, New York 17,
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© 1959 by C-M Business Publications, Inc. PURCHASING is an independent journal, not the official organ of any association. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser." Contents are indexed monthly and annually by the Engineering Index Service and Business Periodicals Index.

PURCHASING is published every-other-Monday by C-M Business Publications, Inc., subsidiary of Conover-Mast Publications, Inc., at 440 Post Road, Orange, Conn. Editorial and executive offices, 205 East 42nd Street, New York 17, New York. Volume 46, No. 6. Subscription rates: United States, U. S. Possessions and Canada: \$4.00 per year; single copies 75 cents; elsewhere, \$20.00 per year; single copies, \$1.00. Please send all notices of change of address to executive offices in New York. Second-Class postage paid at Orange, Conn. and at additional mailing offices.



Fig. 8001 Screwed Ends. Sizes $\frac{1}{2}$ " to 2"

Fig. 8002 Socket Welding Ends

A New Lunkenheimer Valve

CHECK THE FEATURES OF THIS LUNKENHEIMER FORGED STEEL GATE VALVE

This new Lunkenheimer Forged Steel Gate Valve is already building a reputation for rugged service. Completely new in design, it's compactly built for fast installation in the most cramped quarters. Produced with famous Lunkenheimer materials and highly-skilled workmanship, it handles pressures of 800 lbs. at 850°F., and 2000 lbs. at 100°F. easily and safely. Discs are 13 Chrome Stainless Steel, heat treated completely through to 500 Brinell hardness to eliminate chipping or cracking. Rolled-in Seat Rings can't work loose. This newest addition to the world-famous Lunkenheimer line can help solve *your* valve maintenance problems. Call your Lunkenheimer Distributor, or write us for literature. The Lunkenheimer Company, Cincinnati 14, Ohio.

BRONZE • IRON • STEEL • PVC

L-1007-4



LUNKENHEIMER®
THE ONE *Great* NAME IN VALVES

Straws in the Trade Wind

► **SELLING DURING A STRIKE**—Salesmen who continue to call on purchasing agents when their companies' production is halted by a strike can still render valuable services. Among the ways a vendor can help, according to "The American Salesman" Magazine, are: Keep the P.A. informed on how labor-management negotiations are progressing; aid the P.A. who needs an immediate alternate source of supply, and plan with the buyer for the fastest possible delivery when the strike is settled.

► **CAR RENTAL SAVINGS**—Want to save money on your salesmen's daily car rentals? Then why not work out an arrangement with a national automobile rental company as one large corporation did. Its salesmen and other employees rent cars merely by presenting an authorized card to any agency of the rental company; no deposit is required. Two advantages over the credit card system are realized: the rental firm subtracts a certain percentage from its **monthly invoice** and the corporation obtains greater insurance protection than is normally available on day-to-day rentals.

► **LOWER PRICES WITHOUT LOWERING PRICES?**—Does this sound impossible to you? It isn't. During the recent recession and even

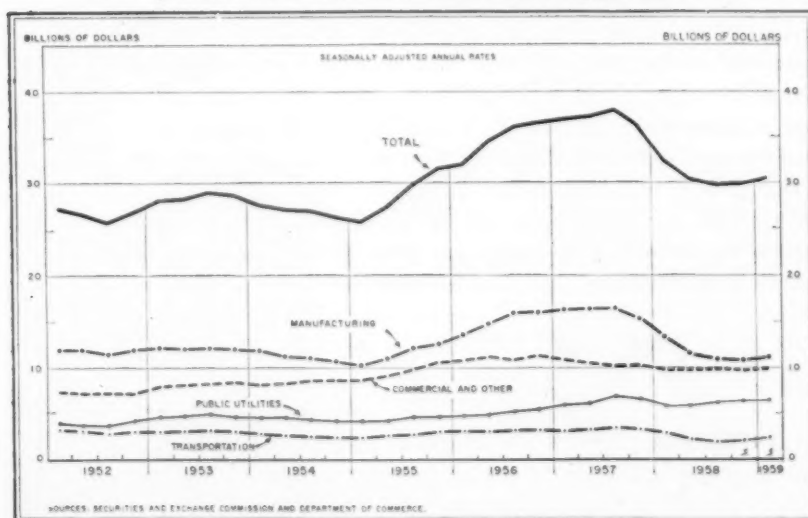
For the P.A.'s Hot File . . .

Here's a good cost cutting technique: assign someone in your department (either on a full-time or part-time basis) to be responsible for checking all items for which your company pays a deposit—like drums, carboys, pallets, and cartons. Have him follow through to make sure that these items are returned to vendors and your deposit is refunded. One major company that recently adopted this technique has found that the savings are really substantial.

under current conditions, vendors permit some buyers to purchase items at lower prices than others. How? By deviating from their stated discount terms. Three methods are being used: (1) granting larger cash discounts than usual, (2) tolerating discounts deducted on invoices paid after the discount period expires, and (3) allowing buyers extra time to pay beyond the due date specified under the regular terms.

(Turn Page)

EXPENDITURES FOR NEW PLANT AND EQUIPMENT



Capital spending in the first quarter of '59 will be about \$30.5 billion (annual rate), up around \$0.6 billion from the previous quarter, according to a recent survey.

Navigation • Propulsion • Armament



Photo: Courtesy Electric Boat, Div. General Dynamics Corp.

U.S. Atomic Subs Depend On Ball Bearings In Over 100 Vital Positions!

Some of the most unique and precise equipment ever engineered is in United States atomic subs . . . with New Departure bearings in many vital positions!

In the submarines' guidance system, New Departure gyro ball bearings help contribute to unerring undersea navigational accuracy. These bearings have been credited with reducing random drift rate to 0.25 degrees per hour.

Many of the atomic power plants that have supplied record-breaking propulsion without refueling, are equipped with New Departure precision ball bearings in reactor control arms, water pumps, and other essential applications.

If you have a vital precision bearing problem, why not call on N/D, too? New Departure's advanced facilities for research, development and production, are your assurance of the ultimate in ball bearing design and precision manufacture.


NEW DEPARTURE
DIVISION OF GENERAL MOTORS, BRISTOL, CONN.
NOTHING ROLLS LIKE A BALL

For More Information Write No. 158 on Inquiry Card—Page 32

Purchasing Previews

Straws in the Trade Wind

► **YES, YES, YES**—The so-called “organization” man (who used to be known as a “yes” man) does not actually exist in seven out of ten major industrial companies. However a Dun & Bradstreet survey of corporate presidents indicates that there is a tendency in that direction. **The prexys admit that management personnel on all levels are heading towards greater conformity and submerging more of their individuality.**

► **OIL-RESISTANT RUBBER**—A new rubber material has been developed that might be quite useful to P.A.'s. The item—nitrile silicone rubber—is (1) oil-resistant and (2) contains high- and low-temperature properties. It can be processed by ordinary rubber-fabricating equipment and can be of major advantage to companies with lubricated industrial equipment using gaskets and seals.

► **PAPERBOARD SALES**—Demand for paper containers and coarse paper has improved in recent months, says Standard & Poor's. Corrugated boxes are expected to show an upturn in the first half of '59. However, in at least one area the price structure is still weak. Unofficial price cutting is reported being led by captive boxmakers of the big paper mills.

► **TRADEMARKS AND CONTENTS**—Requisitions for chemical products often come to purchasing listed under tradenames. It's important for you to know what these products consist of for many reasons—including possible alternate sources of **supply, chance of danger** to personnel and equipment, and fire or explosion risks. Also, you may not be able to find the name of the supplier by his trademark alone. A clearing house has been established to provide buyers with information of this sort. The name: Cheminform Institute in New York City.

► **PRICES GOING UP**—These are some of the materials whose prices have been raised recently by suppliers: carbide drills, reamers, and end mills were increased up to 10% by Super Tool Co.; bulk methanol was raised around 15% by Commercial Solvents Corp.; and rayon and acetate prices were advanced by Celanese Corp. of America.

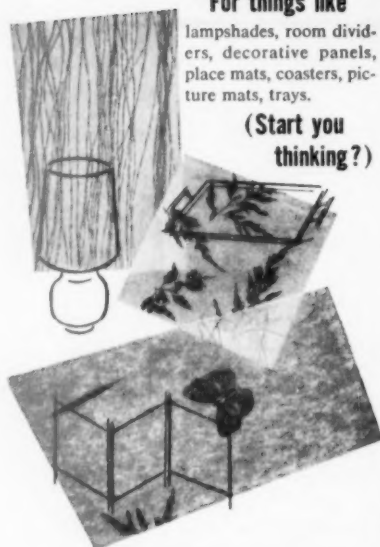
► **REQUISITIONS FOR REQUISITIONS**—Sales of business forms were roughly \$350 million last year, says the Business Forms Institute. Use of these forms—which in a way is an indicator of purchasing activity—is expected to rise further this year from the '58 record.



Benjamin F. Fairless

QUOTE!

“It would be far more beneficial and add more purchasing power to more people if businesses were permitted to pass along some of the advances of productivity to consumers in the form of lower prices or more quality for the same price.” So says Benjamin F. Fairless, president of the American Iron and Steel Institute. The steel executive notes: “I am for real wage increases where money in pay envelopes has the power to buy more. I am against only unearned and unreal wage increases that are unfair to the other factors making better productivity possible. That kind just induces more inflation.”



For things like

lampshades, room dividers, decorative panels, place mats, coasters, picture mats, trays.

(Start you thinking?)

New Decorative Plastics use

PAPER MADE OF GLASS

Translucent beauty of versatile new plastics made by Polyplastex United of Union, N. J. comes from a new kind of glass reinforcing material... made on a paper machine. Riegel supplies this new material, Glascel*, which Polyplastex impregnates with various resins. The result is Parglas* and Polyflux*, two materials with unlimited design possibilities.

Electrical Grades, Too: Riegel Glascel-E* saturating paper has properties, when impregnated, for jobs like tube winding, electrical laminates, printed circuits and other electrical parts.

Get the facts today...ask for samples. Write to Riegel Paper Corporation, P. O. 250, New York 16, N. Y.

MG PAPER BRIGHT & STRONG

for interleaving, wrapping, laminating, coating, and a host of industrial uses

Here's a family of machine-glazed papers now brighter, whiter, cleaner and stronger than you ever thought a low-cost, general-purpose paper could be!

Its high strength often permits use of lighter weights (hence lower cost) than you have used before.

Write today for samples and further information. Riegel Paper Corporation, P. O. Box 250, New York 16, N. Y.

THREE TYPES AVAILABLE—bleached or unbleached—plain or printed

SUPER SMOOTH MG	for mounting, laminating, coating, printing. Typical use: laminated with foil in flip-top cigarette box.
UTILITY MG	for wrapping or interleaving a wide variety of products, and for waxing.
SPECIAL MG	can be tailor-made for you in weights from 15 to 28 lbs. with sulphate or sulphite pulps or special blends. Colors available on special orders. Relatively low making order requirements.

NEW RELEASE & SEPARATING PAPERS

solve "sticky" problems

Riegel now has a big new family of strong separating and release papers designed to protect, yet peel easily from pressure-sensitive adhesives, rubber compounds, vinyl, asphalt, pitch... practically anything sticky.

Look for these uses in your company:

Protective backing for pressure-sensitive labels, shingles, floor tile, or double-faced transfer tape.

Interleaving for tacky rubber or plastic, calendered sheet or proofed stock, laminates, camel-back, pre-forms.

Combination supporting web and interleaving for curing rubber or plastic sheet. (High tensile, heat-and-moisture-resistant Riegel papers go right through the curing ovens or vulcanizers!)

Casting papers for plastics.

Container liners for hot-poured asphalt and glues.

Riegel Separating and Release Papers are provided in a variety of standard grades... or can easily be "tailor-made" to your specifications. Write today for working samples. Riegel Paper Corporation, P. O. Box 250, New York 16, N. Y.



Now...what can we do for you!

Riegel

TECHNICAL PAPERS FOR INDUSTRY

For More Information Write No. 159 on Inquiry Card—Page 32

PURCHASING

PURCHASING OPINION

Is Materials Management A Threat to Purchasing?

Materials management is one of the most widely discussed topics in purchasing circles today. Many believe it to be a concept that will considerably raise the stature of the P.A. But the idea of combining all related materials activities—purchasing, traffic, production control, etc.—into a single department is regarded by some as an attack on the carefully-won position of the purchasing agent. We asked a representative cross-section of purchasing agents a number of questions about the possible threat of materials management. Their combined answers follow:

1. Do you think the materials management approach is gaining wider acceptance in industry?

Yes



82%

No



18%

2. Some say that this is an unhealthy trend since the purchasing agent will be one of several materials executives reporting to an over-all materials manager. Do you agree?

Yes



30%

No



70%

3. What are the advantages of materials management?

Responsibility for material is pinpointed—fewer inter-departmental conflicts



45%

More efficient method of operation



40%

Materials manager is more likely to get recognition from management than the purchasing agent



15%

POWELL LUBRICATED PLUG VALVES



Powell Lubricated Plug Valve, worm gear operated. Fully enclosed gear housing is a safety feature and protects against injuries and damage from the elements and tampering.

Like all Powell Valves, Powell Lubricated Plug Valves are superior in their field . . . and have many advantages over conventional types of Valves:

- Simple design: Only three basic parts—Body, Bonnet, Plug.
- Quick, complete shut-off.
- Tapered plug assures positive seating.
- Machined surfaces of plug and body are not exposed in open position.
- Cavity-free straight passage assures streamlined flow.

Powell Lubricated Plug Valves are available in sizes $\frac{1}{2}$ " through 16", depending on the type required—Semi-steel 175 and 200 pounds WOG; Carbon Steel ASA 150 and 300 pounds. Powell can also furnish Lubricated Plug Valves in other alloys on special order.

For all your valve needs, consult your local Powell Distributor—or write directly to us. Send for our new Lubricated Plug Valve Catalog, Number PV-5.

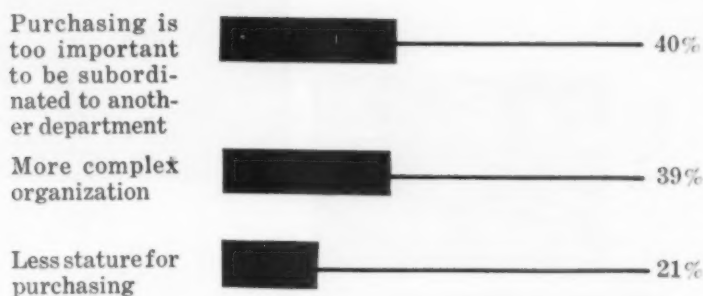
The Wm. Powell Company • Cincinnati 22, Ohio
Dependable Valves Since 1846

POWELL...world's largest family of valves

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Purchasing Opinion

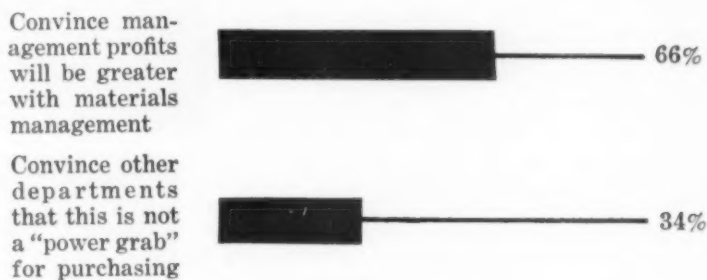
4. What are the disadvantages of materials management?



5. Are you presently promoting or do you intend to promote the materials management concept in your company?



6. If you approve of materials management, what do you think purchasing should do to promote this idea?



7. Do you think your own status would be significantly improved if your management were sold on the materials management concept?



How does ESNA's complete line turn your special hex nut requirements into standard parts?

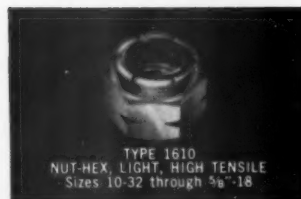


What happens when design or production requires a variation on a standard self-locking hex nut? Can you find a source quickly and economically? You can if you call on ESNA, because ESNA's *standard* line of hexagon nuts includes hundreds of dimensional, material and tensile variations. Probabilities are that one of them will meet your requirements.

Every nut illustrated here is a standard part. They range in size from a sub-miniature 0-80 thread that is only .107" across the flats to a 4"-4 thread that is 6½" across. Thread series include SAE, USS and British BSF, BA and Whitworth series. Most are available in carbon steel, stainless, brass, and aluminum. The locking effectiveness of the red locking collar of an Elastic Stop nut has been tested and proved by more than thirty years of actual field service on locomotives, pile drivers, oil drilling machinery and washing machines, truck and tractors. Elastic Stop nuts do not gall or seize bolt threads; they can be re-used many times.

These standard ESNA hex nuts are available from stock or are produced under normal lead times. And, of course, additional hundreds of "specials" are also available. The next time you need either a standard or an unusual hex nut call ESNA, the company that makes the most complete line of self-locking nuts available to American industry.

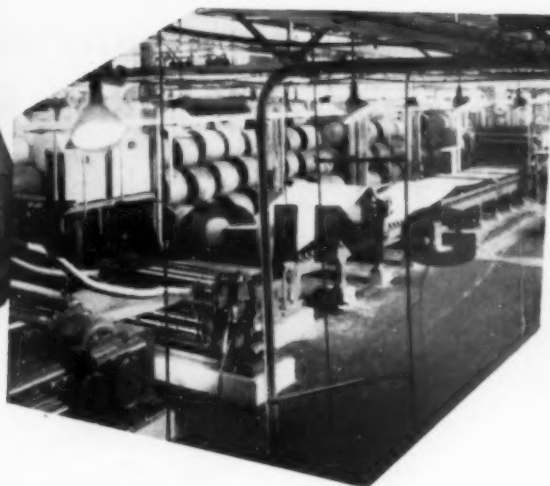
For details on the Elastic Stop® nuts shown here, write Dept. N43-315.



ELASTIC STOP NUT CORPORATION OF AMERICA

2330 Vauxhall Road
Union, New Jersey

For More Information Write No. 161 on Inquiry Card—Page 32



EVERY purchasing agent is concerned, in one way or another, with packaging problems. The P.A. must know about packages for incoming materials and supplies, as well as for outgoing finished products.

Most experts agree that packaging requirements and advances follow or parallel the population trend. One of the ways to meet the needs of the ever-increasing number of consumers is through better packaging. Therefore, to increase profits, purchasing agents must consider the packaging problems of the great American market.

Every P.A. must understand what his manufacturing, research, and design people are planning in the way of packaging for this market for the next ten years. However, he must never lose sight of his current packaging requirements. Here are some of the new ideas that are currently on the packaging scene:

METALS—Weight reduction, improved lining materials, high strength adhesives, and improved manufacturing methods should enable metal cans to maintain their competitive position. Higher prices still appear to be the major factor preventing aluminum cans from capturing a greater part of the market from tin. If the price of aluminum cans ever gets to a point where it is more competitive—not necessarily lower—they will receive much more attention from purchasing executives.

The uses of aluminum foil are expanding. In the near future, look for even more and varied applications for this versatile material. For example, aluminum foil may soon be combined with other low-cost materials for use as a lining or facing.

PAPERBOARD—One of the most noteworthy advantages of paperboard is its ability to accept high-speed, multi-color printing in perfect register. Paperboard remains the favorite for use as shipping containers. Although manufacturers are putting their products in a myriad of small packages, most of these end up in paperboard boxes for shipment to the customer.

One of the big problems with paperboard: the need for more standardization. As boxboard mills and carton manufacturers get closer to this goal, the performance of their cartons will become more efficient.

GLASS—Weight reduction is the big problem in glass. For years glass was a front runner, especially in the packaging of foods. While the gap has been closed somewhat by the development of modern, competitive materials—like plastics—glass is vigorously striving to regain a larger portion of the market. Glass companies are also making product advances in the areas of longer life and improved performance.

Some purchasing agents have switched to clear glass in order to show off colorful products. Spe-

Economical

... big quality money saver
..good-will builder in the washroom



© Fort Howard Paper Company

Fort Howard Paper Company

Green Bay, Wisconsin

America's most complete line of paper towels, tissues and napkins



Special Industry Report:



A collapsible neoprene bag, filled with 10,000 pounds of powdered resin, replaces 50-pound capacity bags. Use of neoprene bags makes outdoor storage possible, cuts unloading time in half.

cial shapes are being created, too, to make products distinctive and give them the elegant look.

PLASTICS—The growth of plastics is the sensation of the packaging industry. And this material is undergoing greater changes more often than any other packaging material. Polyethylene, for example, is considered to be the lowest priced heat-sealable transparent film. Cellophane, with its price advantage removed and no longer standing alone as it did until 1946, is now relying mainly on its ability as a protective film. New extrusion techniques coupled with new resins will give the purchasing agent even greater variety in plastics for packaging.

New materials and new methods beget new problems. For instance, a tremendous amount of effort went into perfecting methods for sealing polyethylene. When this was finally done, another problem arose—how could the package be readily opened after it was sealed? After much experimentation, three successful opening methods were proven successful in extensive tests. These are: peelable seals, perforated film, and tear tapes.

PACKAGING MACHINERY—Complaints can still be heard from P.A.'s that machinery manufacturers are not keeping pace with the new materials available in today's market. But packaging machinery manufacturers are making great progress.

With all the rapid changes in materials coming on the market, though, a manufacturer has to be careful not to spend his time making one-of-a-kind machines. He must concentrate on production equipment that presents a definite promise of profit.

Most manufacturers can now give purchasing agents machines capable of running 300 cartons per minute (compared to conventional speeds of 120-150 per minute). However, be wary. If you're thinking about high-speed machines, make sure your maintenance is adequate. Sloppy maintenance and overdue repairs can be catastrophic on machines running at 300 cartons per minute.

Machinery producers may soon make the picture even brighter for polyethylene. Many are working to develop equipment to produce wrapped packages at speeds equivalent to, or better than, the machines made for cellophane.

Experts on foreign markets are giving this advice to P.A.'s: look at the whole world instead of just the United States. Remember that your product might be used in Africa, France or Denmark, and thus be subjected to both extremes of temperature.

One last tip for foreign traders—many South American businessmen complain that instructions on packages are printed in English only. If they can't understand it, they can't buy it.

*... and now
still Another*

**MORSE
"FIRST"**



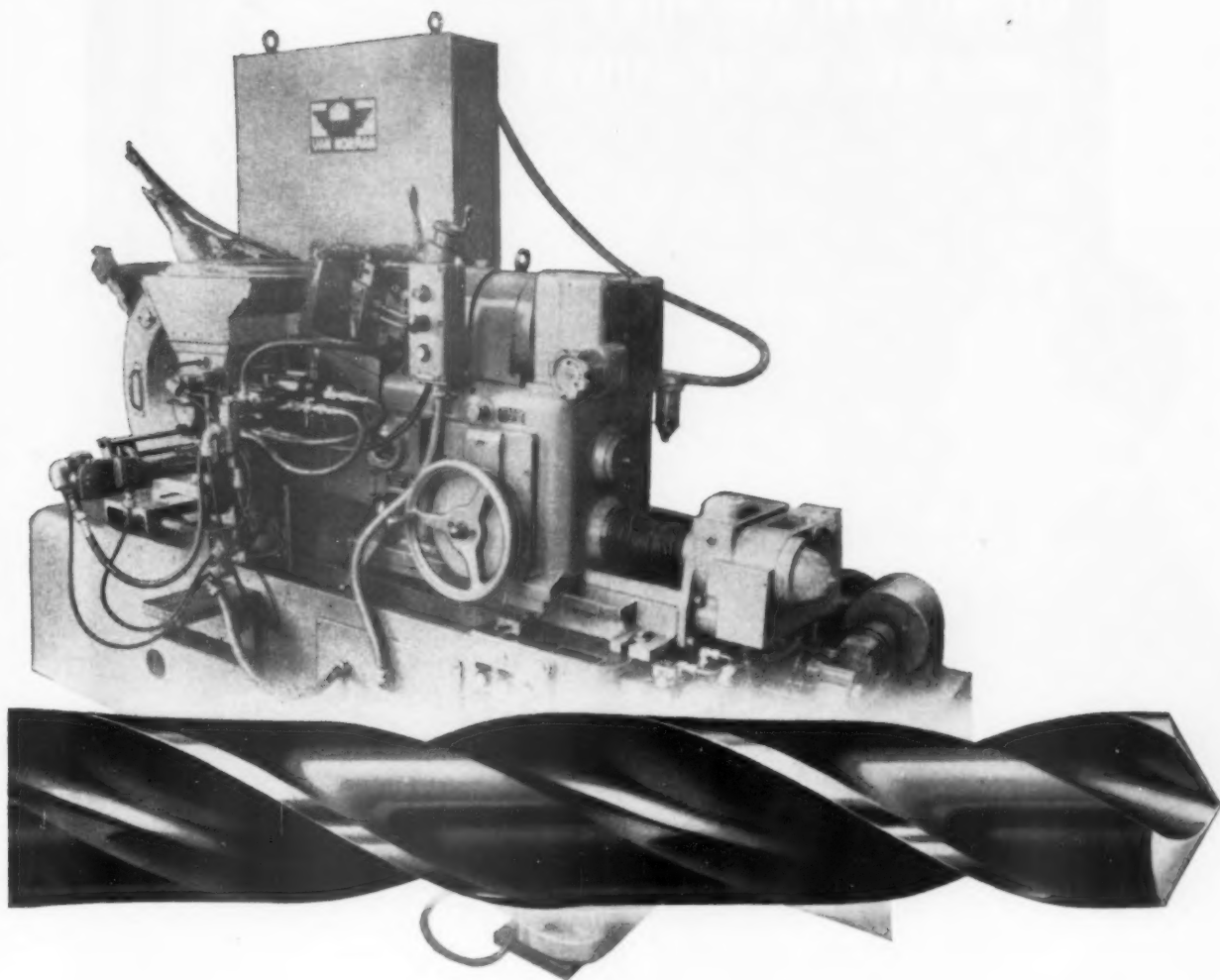
Quality Precision Grinding stepped VAN NORMAN Centerless Grinder

Ever since Stephen Morse produced the first twist drill, Morse has been the leader of progress in cutting-tool production methods.

Electrolizing . . . Vectormatic Taps . . . Morse's flute-grinding process . . . these are some of the Morse milestones in supplying better and better cutting tools to industry.

Now here's another step ahead . . . centerless grinding of drills on this new high-precision, high-production Van Norman Diversimatic machine, specially adapted to Morse requirements.

To you, this means *new high standards* of uniform quality and prompt delivery. See your Morse-Franchised Distributor *today*.



up with this NEW



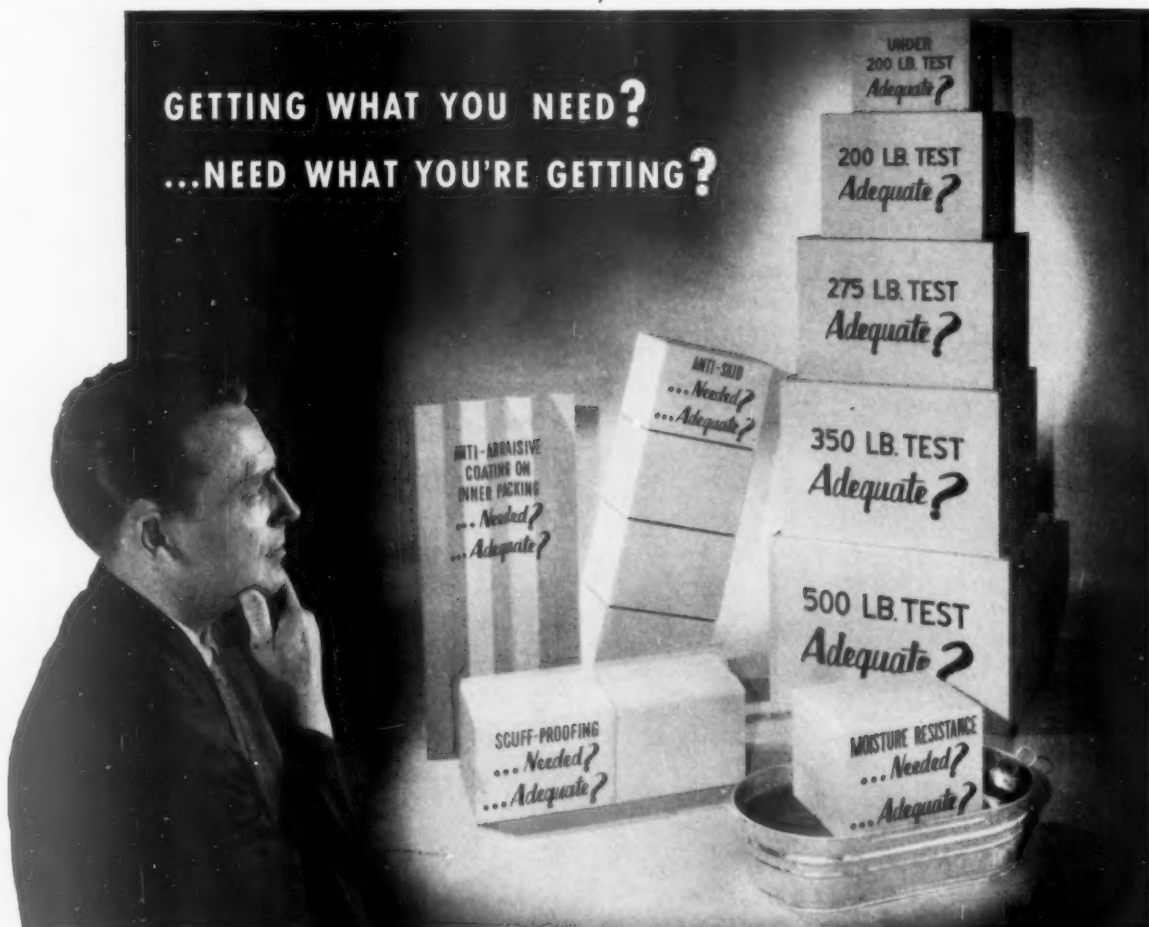
MORSE means
"THE MOST" in Cutting Tools

MORSE TWIST DRILL & MACHINE CO., NEW BEDFORD, MASS.

Warehouses in: New York • Chicago • Detroit • Dallas • San Francisco



Division of VAN NORMAN INDUSTRIES, INC.



**The answer is yes, if your containers
bear the stamp of
Inland Container Corporation.**

Inland's experience and facilities help our customers avoid both the dangers of marginal packaging and the expense of unnecessary "extras."

Our engineers and technical men can dramatically demonstrate and prove what the minimum packaging specifications for any product should be . . . how much protection would be sacrificed by "cutting the corners."

They also help our customers determine whether or not certain "extras" are worth what they cost. For

example, an Inland customer recently became interested in waterproofing his containers because of reports that some of them were being exposed to rain and moisture. An Inland survey revealed that very few of his containers were being exposed, and even those were affording adequate protection to the product. Therefore, even the least expensive type of waterproofing would not have been justified.

Just how good should *your* corrugated containers be? It pays to get the right answer from your Inland Package Engineer. Call him for every corrugated requirement. He is a *specialist* in his field.

Inland personnel and facilities are devoted exclusively to making quality corrugated shipping containers.

Inland Boxes Build Good Will . . .

INLAND CONTAINER CORPORATION

MILLS: Macon, Georgia; Rome, Georgia.

PLANTS AND SALES OFFICES: Indianapolis, Indiana; Middletown, Ohio; Milwaukee, Wisconsin; Evansville, Indiana; Detroit, Michigan; Macon, Georgia; Erie, Pennsylvania; Ashtabula, Ohio; Orlando, Florida; Rome, Georgia; Biglerville, Pennsylvania; Chicago, Illinois; Dallas, Texas; Louisville, Kentucky.

OTHER SALES OFFICES IN PRINCIPAL CITIES

These 4 steps show why SPANG brings you the best galvanized steel pipe!

THOROUGH CLEANING of the pipe before galvanizing removes all dirt, grease and scale, leaves a clean surface for the prime western zinc galvanizing finish.



STEAM-WIPING of the pipe's exterior, as it comes from the kettle through an air ring, produces a smooth even finish that will stand up under rough usage.



SUPERHEATED STEAM blown through the pipe interior removes excess zinc inside, assures a smooth uniform surface for easy flow of liquids.



QUICK QUENCHING of the pipe in a sodium dichromate solution bonds the galvanized finish to the steel, adds extra service to the life of the pipe.

This is just part of the *quality-control* processing that each length of Spang Steel Pipe receives. Careful control from skelp through the inspection tables assures you of a *top-quality* pipe for *top-quality* installations. Next job, make it steel pipe... make it Spang! Your local Spang Distributor is at your service!



THE NATIONAL SUPPLY COMPANY

Subsidiary of Armco Steel Corporation



TWO GATEWAY CENTER, PITTSBURGH, PA.

For More Information Write No. 165 on Inquiry Card—Page 32

MARCH 16, 1959

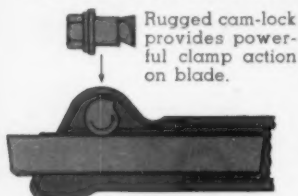
21

MORE THAN MEETS THE EYE!

FOR INSTANCE

Here are two examples typical of Williams cost-saving features.

WILLIAMS CUTTING-OFF AND SIDE TOOL HOLDERS



Rugged cam-lock provides powerful clamp action on blade.

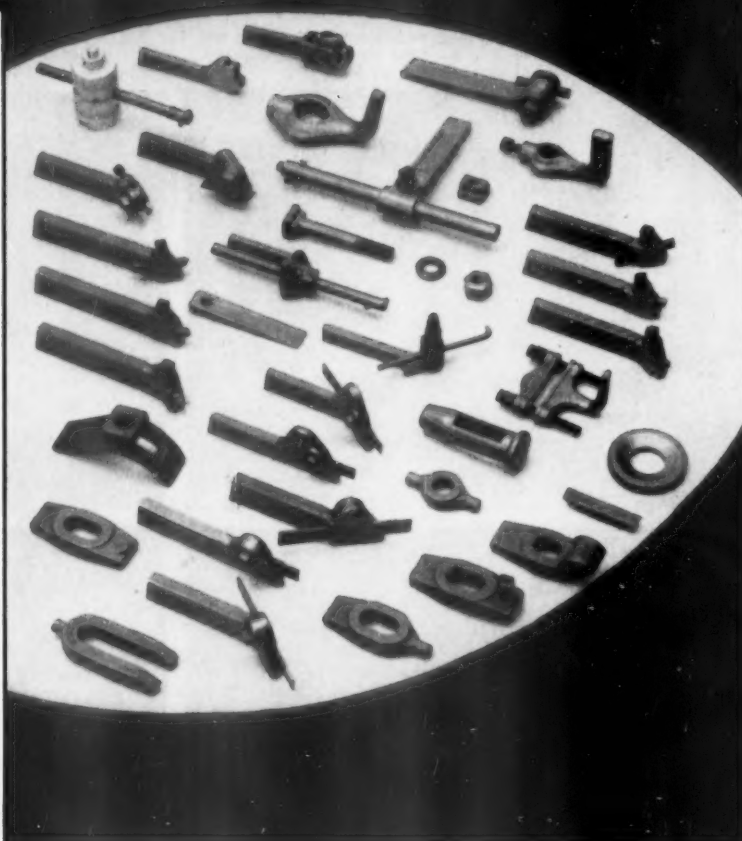
SIZE FOR SIZE SAME HOLDER TAKES BOTH STANDARD CUTTING-OFF BLADE AND SIDE TOOL BLADE. ONE HOLDER DOES THE WORK OF TWO. TOOL INVESTMENT IS CUT IN HALF.

WILLIAMS BORING TOOL HOLDERS

EACH HOLDER TAKES MANY SIZES OF BARS WITHOUT THE USE OF SLEEVES OR BUSHINGS WHICH CAN LEAD TO SPRING AND CHATTER.



V-BLOCK CONSTRUCTION PREVENTS CHATTERING SINCE BARS ARE GRIPPED AT FOUR POINTS AND CANNOT MOVE VERTICALLY OR HORIZONTALLY.



LOOK behind the performance of any Williams Tool Holder and you will find one or more superior features which make the big difference in rigidity and versatility ... that save so many machine shop dollars.

Buy Williams **BETTER TOOLS FOR BETTER WORK** from Catalog 303

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TOOLS OF INDUSTRY

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DIVISION OF UNITED-GRANTFIELD CORPORATION

404 VULCAN ST., BUFFALO 7, N.Y.

Washington Report

The Inflation Battle: Tieing Wage Increases To Productivity



Senator Paul Douglas (D-Ill.), chairman of the Joint Economic Committee, is preparing a study of the causes of inflation.

TARGET OF BOTH political parties is to hold wage increases to the same level as rises in productivity. For the only alternative is higher prices.

While price increases have long been a part of the post-war economic cycle, something new has been added that makes price boosts dangerous. Foreign competition is no longer just a talking point—it is now very real.

The main problem is not that foreign producers will be able to quickly replace U.S. manufacturers in the American market on a volume basis. The immediate blow will be to U.S. exports. In some instances, the European and Japanese products will undersell the U.S. product on the American market, but our demands are so vast that only specialties will be affected.

An important question is this: can we give up our export markets—and depend on the domestic market to take all of our product? U.S. manufacturers want to expand their markets beyond our shores and are opening branch plants abroad. In addition, abandonment of our export trade

would tend to shrink job opportunities in this country.

Union leaders have taken this position: the answer to our problem is to pump more money into the economy. They feel that higher wages would create expanded markets and increased job opportunities. This was also their position in 1949 and in 1955. In both instances, this formula was followed to some degree—leading to rapid business recovery and greater industrial employment.

In 1949, however, European competition was not a factor. Even in 1955, we still had no real contenders for the export market. Now there is substantial foreign competition that domestic manufacturers must contend with.

Steel Strike Probable

Speculation here is growing that there may be a steel strike. But it is hoped that whatever settlement is reached will be within the bounds that could leave our price structure competitive.

The steel industry in recent years has had short quickie strikes and long drawn-out ones. In 1952 the steelworkers were out for 54

days, in a strike that drained inventory reserves of most steel users.

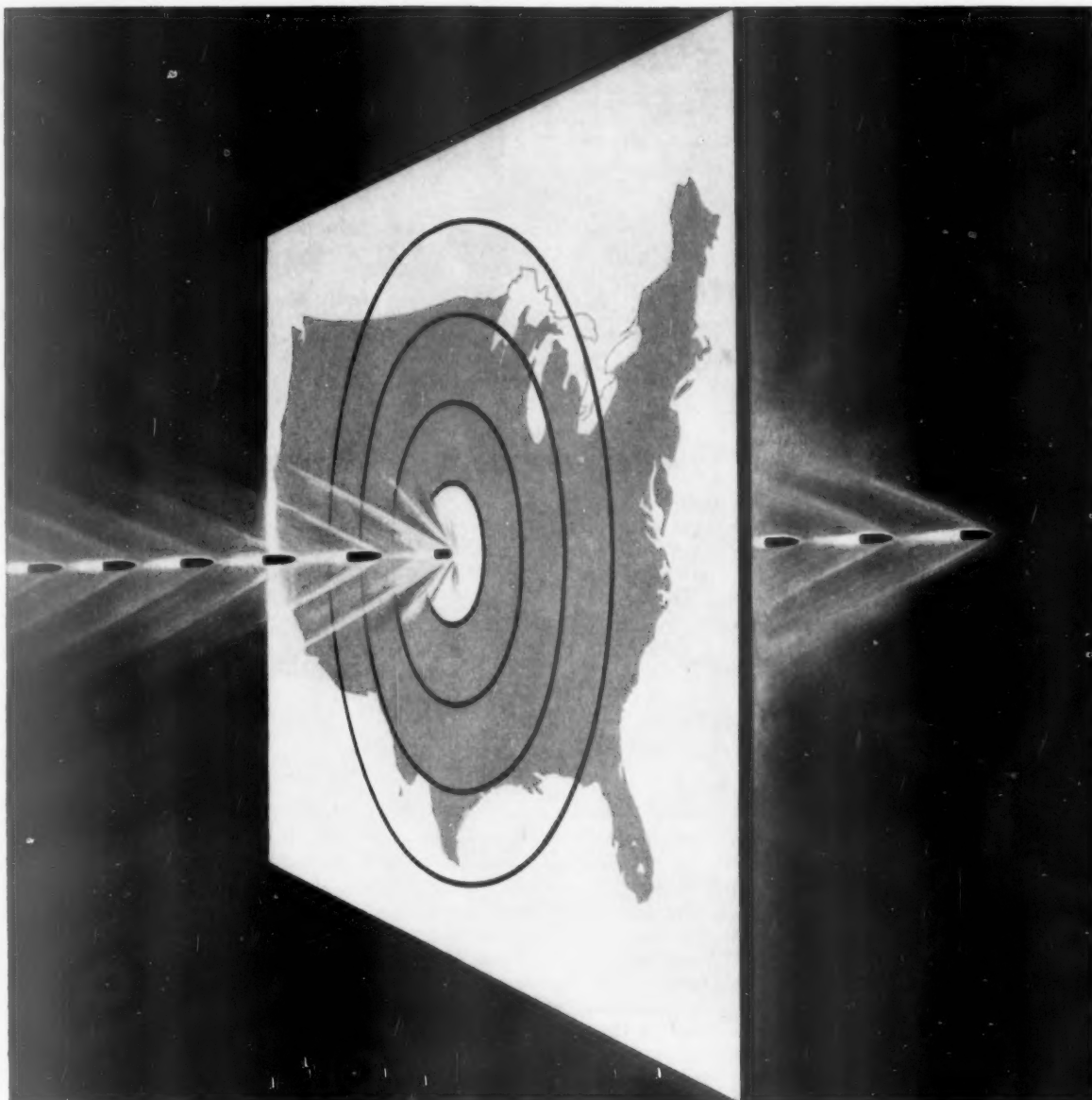
In 1955, there was a quickie that lasted 12 hours. The steelworkers struck again in 1956, this time for 34 days.

Obviously, the duration of a possible strike in '59 would depend on the size of increase sought by the union. Stiff wage demands and an inflexible bargaining position could lead to a drawn-out conflict. But government negotiators are betting that if a strike is called, it will not be a long one.

Steel Holidays

One of the by-products of our steel production structure is that the industry can operate more efficiently at an 80% to 85% rate 10 months a year than at a far lesser rate spread evenly around the calendar. This is understood by both management and labor, and while there is no plan to take a holiday, the simple economics affect both sides.

Such a holiday arrangement has been going on in the coal industry for many years. Involun-



Long Distance is a RIFLE SHOT direct to your best buys everywhere

Where's the lowest price? The highest quality? The most economical quantity?

A reach for the telephone can lead you directly to the answers. Long Distance saves time, money and headaches, keeps you abreast of fluctuating market conditions.

To buy better and faster, you're wise to rely on the speed and ease of Long Distance.

YOU SAVE MONEY WHEN YOU CALL STATION-TO-STATION instead of Person-to-Person

Here are some examples:

	Day Rates (first 3 minutes) Person-to- Person	Station-to- Station	Each Added Minute (applies to all calls)
New York to New Haven	65¢	45¢	15¢
Chicago to Louisville	\$1.35	95¢	25¢
Norfolk, Va. to Boston	\$1.70	\$1.20	30¢
Denver to San Francisco	\$2.40	\$1.70	45¢
Dallas to Philadelphia	\$2.65	\$1.90	50¢

Add 10% federal excise tax.

BELL TELEPHONE SYSTEM

Long Distance pays off! Use it now...for all it's worth!



For More Information Write No. 167 on Inquiry Card—Page 32

Washington Report

tary, or what might possibly be described by some as voluntary holidays are established to rationalize production and consumption.

Price Stability

Prices have been generally stable for the last year and a half, marking one of the flattest price plateaus in recent history. Stability will probably continue for at least several more months, with wholesale prices moving up only a tenth of a percentage point or so.

Bureau of Labor Statistics price analysts say they cannot pinpoint any strain on the price level for the next few months. They believe that prices will remain level until a new steel wage contract is signed.

There is a parallel between the present price line and the long period of price stability in 1953 and 1954. At that time, prices finally broke out of the plateau with sharp increases.

The wholesale price index for all commodities in January 1958 was 118.9. A year later, the figure stood at 119.5.

Steel Buying Pace Quickens

Government reports show that heavy inventory buying started in late January—largely in steel. Although the buying began in anticipation of a strike, steel inventories generally were at such a low level that even if there is no strike, there will be no sudden dropoff in accumulation.

Buying is reaching such a high level that the rate of ingot production may soon climb above the 90% level. Ingot production capacity is 147.6 million tons—6.7 million tons greater than that of last year.

Inventories Stable

Manufacturers' inventories have been stable in recent months. In the last quarter of last year, there was little change in stocks, either in durables or nondurables. There was some increase in the retail

levels at the end of the year, but this was largely due to the new model auto buildup.

Will steel buying for inventory spread to other materials? It may well be that buyers, finding steel hard to get, will give their inventory position in other fields another look. More purchasing of nonferrous metals and other items could be the result.

Chemical Industry Continues Expansion

In contrast to the general drop in capital expansion last year, the chemical industry hit a new high in facilities construction.

Plans call for continuing the expansion program this year. However, the pace will be reduced somewhat from the 1958 program.

In '58, the largest area of expansion was in the intermediate chemicals. These are sold largely to industry for further processing and resale.

In the organic field—where about 25% of the industry's expansion has taken place—the capacity buildup will continue to grow. This will be used to make more waxes, esters, and alcohols. Plant expansion for production of drugs and medicines is also taking place.

Many of the old workhorses in the organic chemical family are undergoing further expansion. These include caustic soda, chlorine, sulphuric and nitric acid and hydrogen peroxide.

There is also an enlargement program underway in textile chemicals—including chemicals used to impregnate fibers. In addition, there is further expansion in detergents.

In the plastics field, there has been a considerable expansion of existing facilities. Producers of plastics feel that they can force a breakthrough into the construction field this year. How? With large-scale use of plastics for piping, lighting fixtures, paints, edging, and molding.

(Turn page)

NEW FROM CONTINENTAL

HI-STACKER

utility can with reversible spout



Saves time, space, filling and shipping costs

The spout is inverted during shipment and storage. To pour, just reverse spout. Fast smooth dispensing. Ask for details.



Looks like Continental's famous dome top utility can (at left). Completely redesigned to save you time and money.

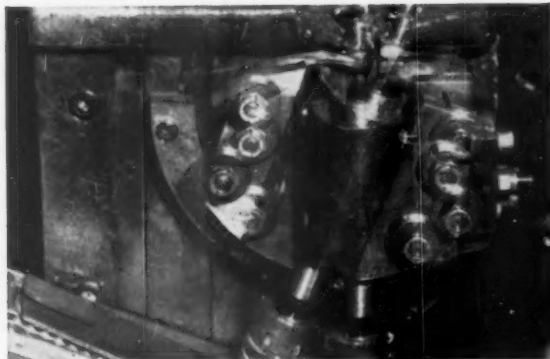
CONTINENTAL CAN COMPANY

Eastern Div.: 100 E. 42nd St., New York 17
Central Div.: 135 So. La Salle St., Chicago 3
Pacific Div.: Russ Building, San Francisco 4
Canadian Div.: 5595 Pare St., Montreal, Que.
For More Information Write No. 168
on Inquiry Card—Page 32

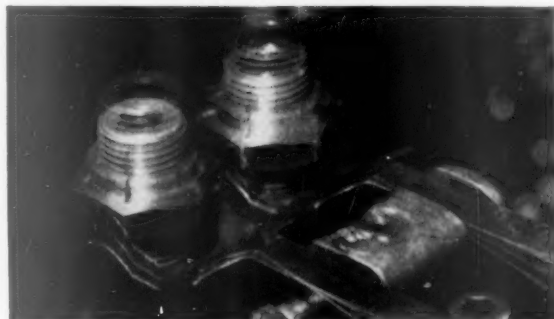
One source of supply for all your locknut requirements



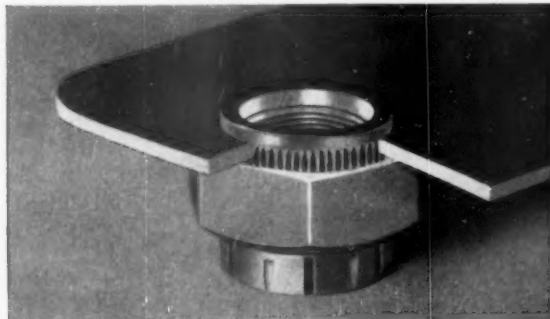
FLEXLOC self-locking nuts are available in alloy steel (plain or cadmium plated) for temperatures to 550°F.; in corrosion-resisting steel (passivated or silver plated) for temperatures to 750°F.; and in brass (plain or cadmium plated) and aluminum (plain or chemically treated) for temperatures to 250°F.



Stroboscopic photo shows application of full-height FLEXLOC locknuts on the transfer injector of a nut finishing machine. Despite constant rockerlike motion of the injector arm, FLEXLOCs do not work loose. Full-height FLEXLOCs are available in sizes #2 through 2 in.; also in microsizes #0 through #4.



FLEXLOC thin nuts are used here as stop nuts on the stamping attachment of a milling machine; resist thousands of impacts an hour. Thin FLEXLOCs are furnished in sizes #6 through 1 1/2 in.; are designed for use where weight savings are important or where locking action is desired with shorter bolts.



FLEXLOC clinch nuts simplify fastening to sheet metal; aid in blind fastening. Clinch nuts are available in sizes #4 through 5/16 in.; also in microsizes #0 through #4. Cutaway view shows how FLEXLOC becomes an integral part of the completed assembly. FLEXLOC functions as a tapped hole—one that will lock a screw securely in place.

Wherever you have a requirement for vibration-proof nut assembly, there is a FLEXLOC self-locking nut to meet it. And FLEXLOCs are available to you locally from a single source of supply. Your SPS distributor carries them in a complete range of types, sizes, materials and finishes. This simplifies your paper work and insures prompt delivery.

FLEXLOCs are 1-piece, all-metal fasteners requiring no auxiliary locking devices—no lockwashers, jam nuts or cotter pins.

There is nothing extra to put together, come apart or get lost. Thus FLEXLOCs facilitate design and save assembly time. They also save on maintenance, because they can be reused repeatedly without loss of locking reliability. See your authorized SPS distributor for complete information on FLEXLOC self-locking nuts...or write SPS—manufacturer of precision threaded fasteners, including titanium. Flexloc Locknut Division, STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

SPS

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Standard Pressed Steel Co. • The Cleveland Cap Screw Co. •
Columbia Steel Equipment Co. • National Machine Products Co.
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Unbrako Socket Screw Co., Ltd.

Washington Report

● Gov't Adopts Uniform Quality Control Spec

A uniform quality control specification has been developed by the Department of Defense for complex items of equipment.

The new "spec" supersedes the Air Force quality control spec and the Army spec. It is less stringent than these two, to allow for broader application. This was considered necessary if the quality control procedures were to be applied equally to all three services.

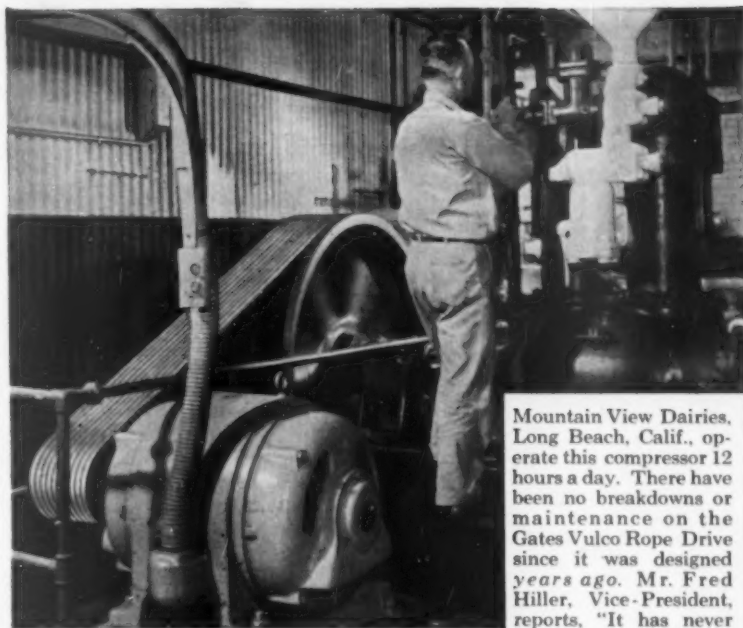
The government has a long-standing policy that suppliers be not only responsible for production, but also for inspection and testing. The government role has been held to be that of monitoring. This was accepted as meaning that it: (1) should look over the contractor's data and (2) should make adequate spot checks of supplies.

This general approach was and continues to be adequate for such standard items as consumer goods and ordinary industrial supplies. However, it is not adequate for such complex items as ships, missiles and tanks. For these items, the contractor could be held responsible for the product and specifications, but the tests would have to be made by the user.

Under this concept, the government calls on the contractor to maintain what it considers an adequate quality control system. To this end, it has established a "quality control spec."

The "spec" requires contractors to: (1) have a quality control system and (2) observe certain minimum controls. In addition, the government must verify the standards the contractor is using.

The objective of the new "spec" is to cut red tape and create a "single language" that will apply to all the services and all military suppliers. With so many suppliers dealing with the services on different contracts, a variety of standards and practices is obviously confusing.—By A. N. Weckler



Mountain View Dairies, Long Beach, Calif., operate this compressor 12 hours a day. There have been no breakdowns or maintenance on the Gates Vulco Rope Drive since it was designed years ago. Mr. Fred Hiller, Vice-President, reports, "It has never given us a moment's trouble."

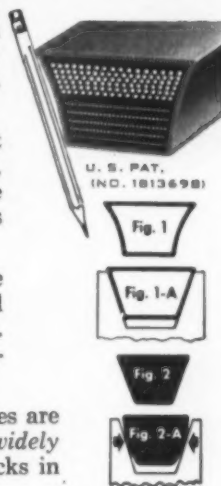
The No. 1 choice of industry everywhere ...the V-belt with concave sides

To prove to yourself why concave sides give this V-belt far longer life, make this simple test: bend a Gates V-Belt as if it were going around a sheave. Feel how the concave sides (Fig. 1) fill out ... become perfectly straight (Fig. 1-A).

Note how the belt makes full contact with the sides of a sheave ... grips evenly, thus distributing wear uniformly along the sides of the belt. Uniform wear lengthens belt life — keeps costs down.

With a straight-sided belt (Fig. 2) the sides *bulge out* when the belt is bent, and wear is concentrated on the bulge (Fig. 2-A). Uneven wear shortens belt life — increases belt costs.

Because Gates V-Belts with concave sides are so universally preferred, they are the *most widely available*. There are Gates Distributor stocks in industrial centers *throughout the world*.



The Gates Rubber Company, Denver, Colorado

Gates Rubber of Canada Ltd., Brantford, Ontario



World's Largest Maker of V-Belts

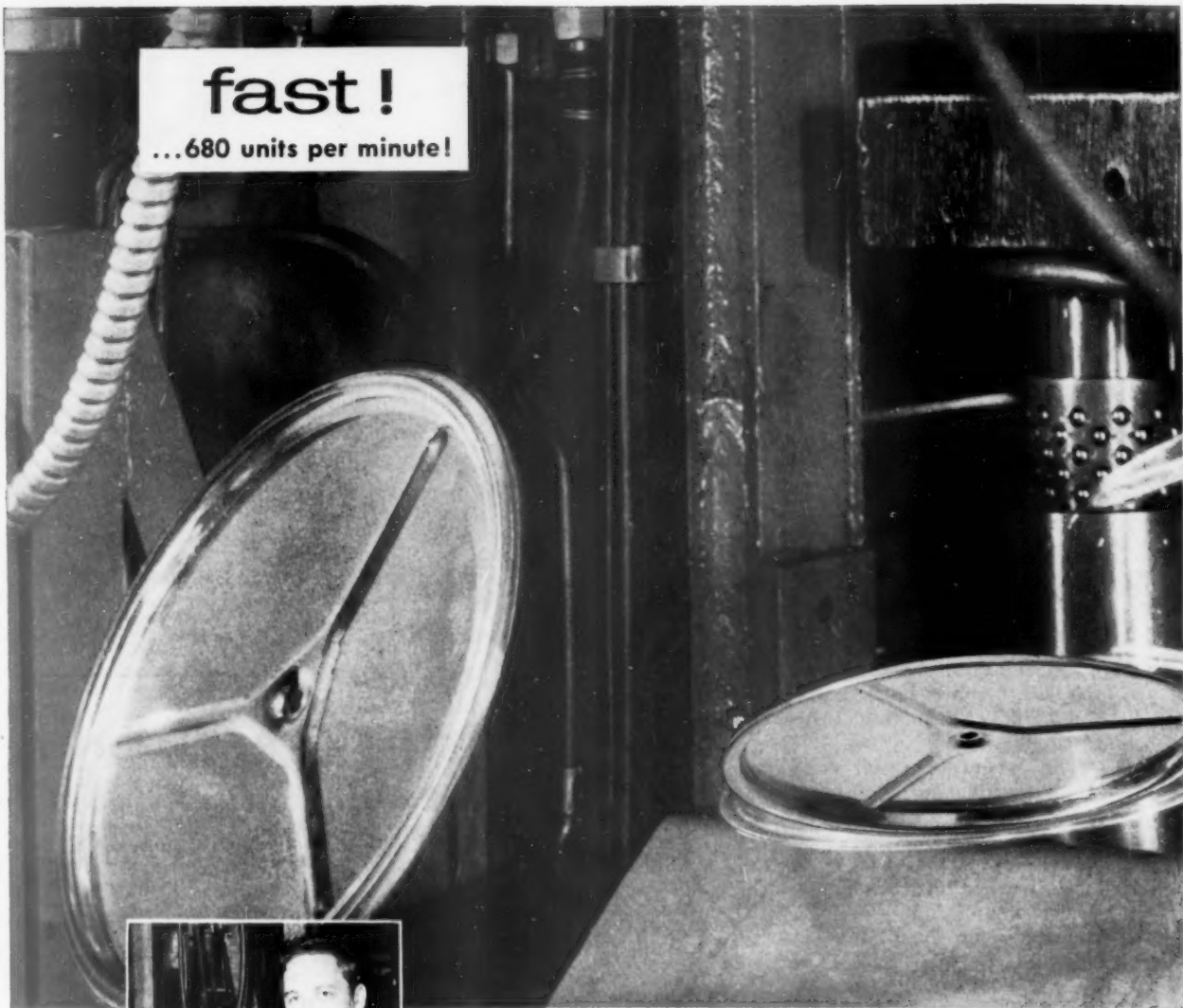
TPA 392

Gates VULCO ROPE Drives

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fast!

...680 units per minute!



Actual action photo taken by stroboflash

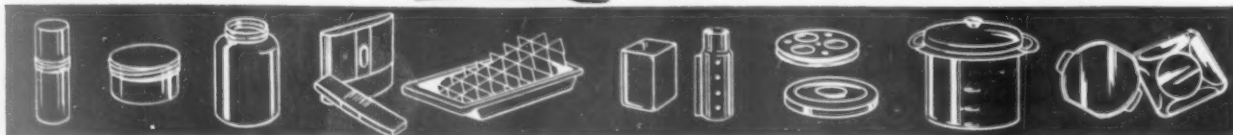
automatic

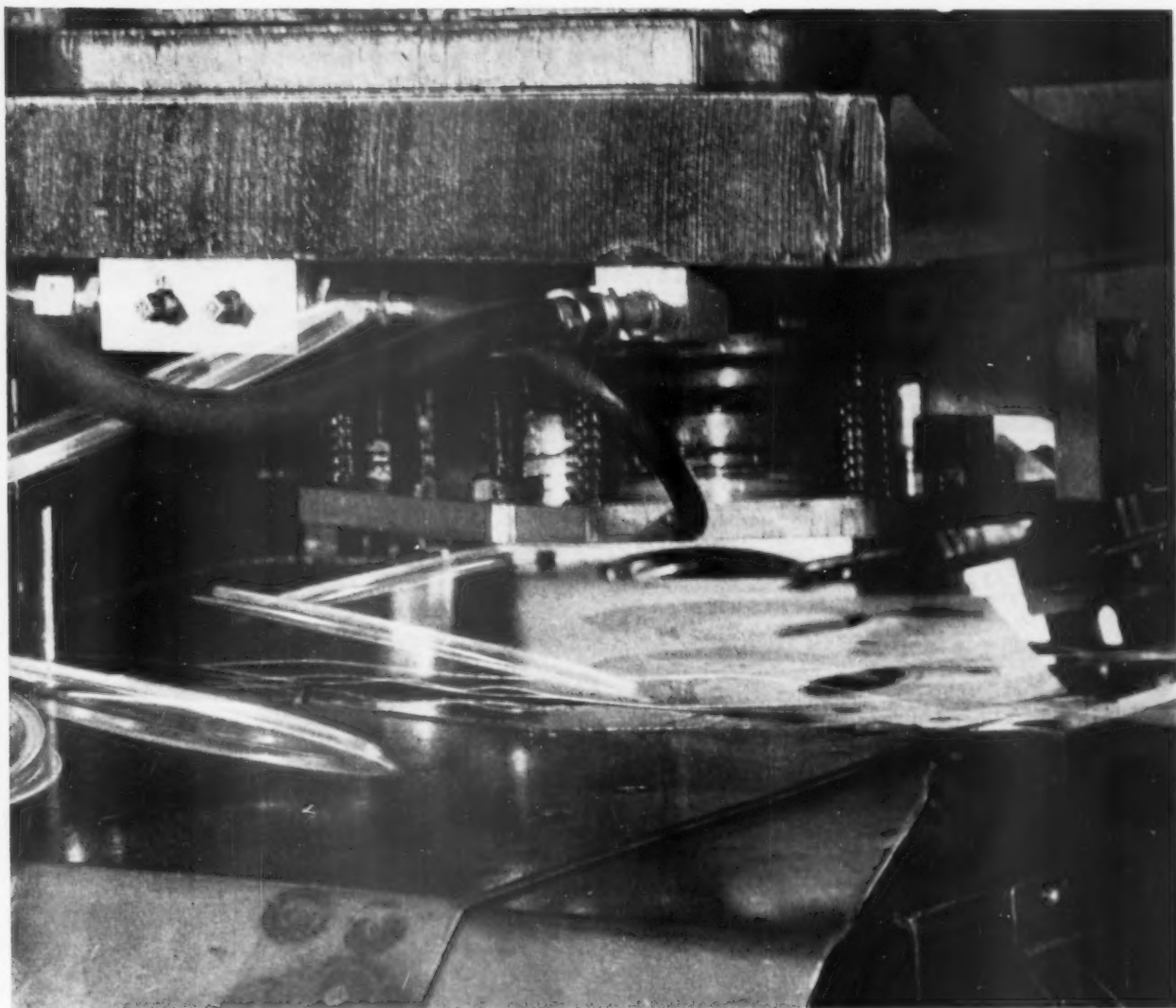
Speed plus accuracy equals low-cost volume.

That's the formula for success in component part production *and* purchasing, because you only benefit from quantity buying when you have a source that's set up for *quantity* and *quality* production.

We have high-speed equipment unduplicated anywhere in America, that can

"Gunner" Don Lang, "zeros in" on top profits for our customers with his high-speed Flexopress ripping out machine-gun bursts of 680 component parts per minute.





weapon...peacetime style!

be tooled to your job, if your job can absorb real quantity runs. The resultant saving is what we call "pushbutton profit" for you, the buyer. It comes from *automatic* operation, making thousands of units every hour of the run.

If "pushbutton profits" appeal to you and pushbutton methods can be applied to your job, send us your inquiries, for prompt quotation.

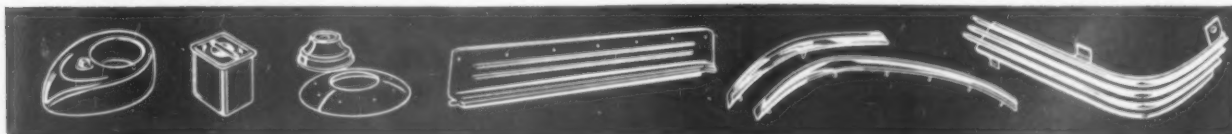


MIRRO ALUMINUM COMPANY

(Formerly Aluminum Goods Manufacturing Company)

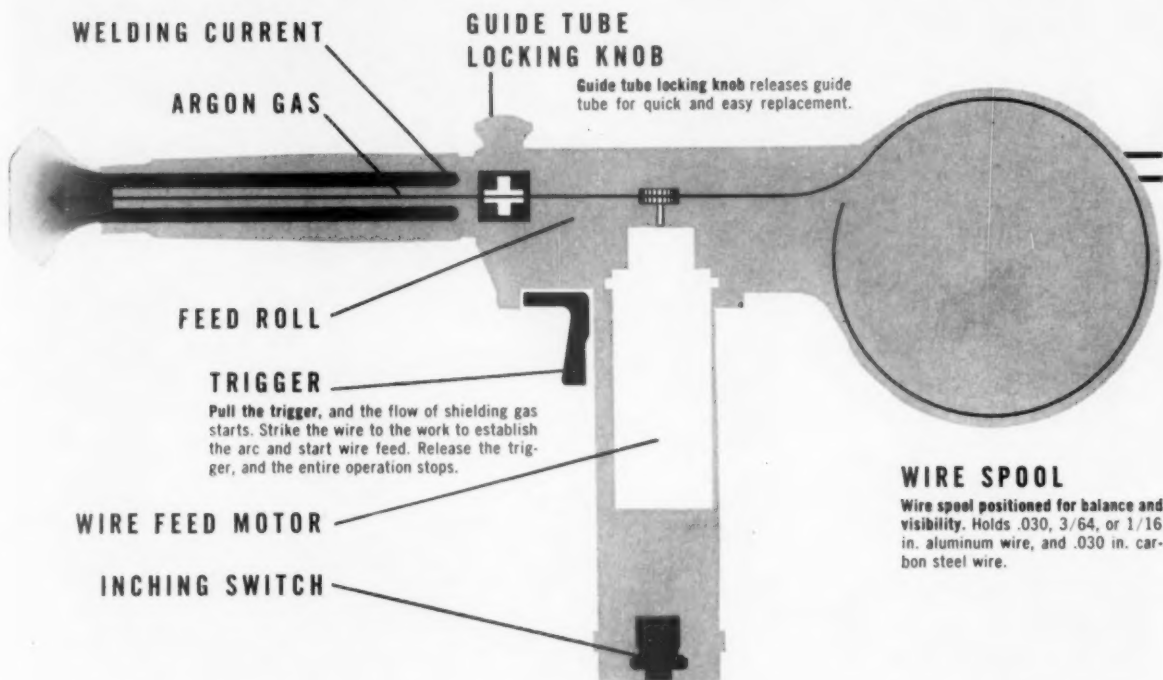
MANITOWOC, WISCONSIN

FIFTH AVENUE BLDG., NEW YORK 10 • MERCHANDISE MART, CHICAGO 14



Try LINDE'S New "SIGMETTE" Torch!

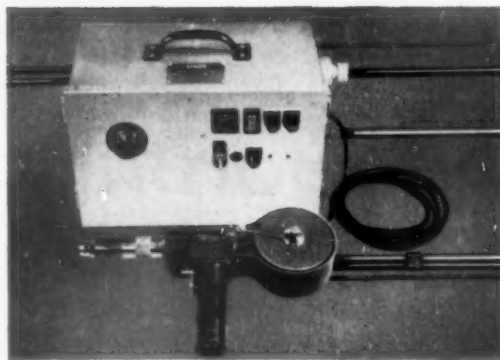
-PORTABLE, COMPACT



Here's the torch that goes to the job—lets you work in any position . . . in confined spaces . . . at distance remote from the power source!

Designed for Sigma welding of light metals, the "Sigmette" torch is compact and sturdy. Notice the thin silhouette and position of the spool for complete visibility. Torch and control are completely insulated and grounded—the operator is protected from electrically "hot" parts. And the only maintenance tool needed is a screwdriver!

Find out how Linde's new "Sigmette" torch can speed your operations, bring new economies through its advanced design features. For a free demonstration and detailed information, mail the coupon today or call the nearest Linde Office.



Complete unit—torch weighs 3 pounds, 1 oz.; control weighs 19 pounds, 2 oz.; Current rating, 125 to 200 amp.; Welding power, direct current reverse polarity

Dept. PC-3, Linde Company
Division of Union Carbide Corporation
30 East 42nd Street, New York 17, N.Y.

- ☐ Please send complete facts on the new "Sigmette" torch.
☐ Please arrange to let me try it.

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"Linde", "Sigmette" and "Union Carbide" are trademarks of Union Carbide Corporation.



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THERE'S A VERSATILE SAGINAW SCREW TO SOLVE EVERY ACTUATION PROBLEM

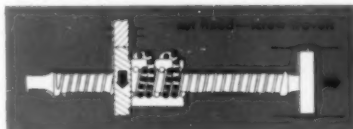
ACTUATES and POSITIONS WITH OVER 90% EFFICIENCY

- **POSITIONS MORE PRECISELY** than acme screws, hydraulics or pneumatics. Can be held within .0005 in./ft. of travel.
- **SAVES POWER** with over 90% efficiency. Permits much smaller motors, far less power drain, simplifies circuitry.
- **SAVES SPACE/WEIGHT** because Saginaw b/b Screws are compact. Allows smaller, lighter motors, gear boxes. Eliminates cumbersome auxiliary equipment.
- **DEPENDABLE PERFORMANCE.** Saginaw Screws are far more reliable than hydraulics. Gothic-arch grooves, yoke deflectors, multiple circuits increase assurance.
- **TEMPERATURE TOLERANCE.** Normal operating range is from -75°F. to $+275^{\circ}\text{F.}$ With selected materials, up to $+900^{\circ}\text{F.}$
- **LUBRICATION LATITUDE.** If lube fails, the Saginaw b/b Screw still functions with remarkable efficiency.

The men who want to exact the maximum potential from their products specify the remarkable Saginaw Screw! The unequalled efficiency and precision of the Saginaw b/b Screw goes a long way to eliminate design and production problems. It actuates your product (large or small) more smoothly, simply, surely, and very often more cheaply than other methods. For full details, write or phone today for your free 1959 engineering data book on Saginaw b/b Screws and Splines.

A FEW TYPICAL USES OF SAGINAW SCREWS:

- Airplane & Missile Components
- Photography Equipment
- Bumper Jacks and Lift Trucks
- Convertible Top Lifts
- Automatic Garage Doors
- Circuit Breakers
- Die Table Positioners
- Farm Equipment and many, many other applications



NUT TRAVELS: When rotary motion is applied to the screw, the b/b nut glides along the axis of the screw on rolling steel balls, converting rotary force and motion to linear force and motion with 4/5 less torque than acme screws.

SCREW TRAVELS: When rotary motion is applied to the b/b nut, the screw glides along its longitudinal axis on rolling steel balls, converting rotary force and motion to linear force and motion with unprecedented efficiency.



WORLD'S MOST
EFFICIENT
ACTUATION DEVICE

Saginaw  **ball bearing screw**

SAGINAW STEERING GEAR DIVISION OF GENERAL MOTORS • SAGINAW, MICHIGAN

WORLD'S LARGEST PRODUCER OF BALL BEARING SCREWS AND SPLINES

IT PAYS TO STANDARDIZE ON STANSCREW



Machine Bolts and Carriage Bolts Now Produced to Stanscrew Quality Standards

Stanscrew presents a new line . . . carriage and hex machine bolts . . . now produced and stocked in a complete selection of more than 500 different sizes. Manufactured under careful quality control methods, they meet the same standards of uniformity and dependability which have made other Stanscrew fasteners a leading choice of American industry for over 80 years.

These new additions bring Stanscrew's complete line to over 5,000 different types and sizes of standard, catalogued fasteners. From this comprehensive selection you can find dependable, economical answers to the overwhelming majority of all your fastener needs.

Your Stanscrew fastener specialist, available

through your nearby Stanscrew distributor, can show you many ways these inexpensive standard items will cut your product costs . . . for example, by replacing costly special fasteners.

Each of the over 5,000 different Stanscrew fasteners is always kept in stock at three conveniently located plants. This enables your Stanscrew distributor to provide faster service . . . to be particularly helpful in emergency situations where prompt delivery can mean substantial savings.

So, whatever your fastener requirements, just call your nearby Stanscrew distributor. Or for complete information on Stanscrew's new carriage and machine bolts, simply mail the coupon below.

STANSCREW FASTENERS

STANDARD SCREW COMPANY

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS

HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT

WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

Standard Screw Company

2701 Washington Blvd.
Bellwood, Illinois

Please forward complete information on

☐ Machine bolts ☐ Carriage bolts

Name _____ Title _____

Company _____

Address _____

City _____ State _____

For More Information Write No. 173 on Inquiry Card—Page 32

the
work's
lighter

when
the
light's
brighter!



WESTINGHOUSE SUPER-HI™ FLUORESCENT LAMPS ARE 2½ TIMES BRIGHTER!

Rosie's just collected an armful of posies from the boss. Since they put in Westinghouse Super-Hi fluorescent lamps, everything's looked brighter (2½ times brighter than with regular fluorescents, in fact) and Rosie's efficiency has soared.

Of course what Rosie didn't know is that:

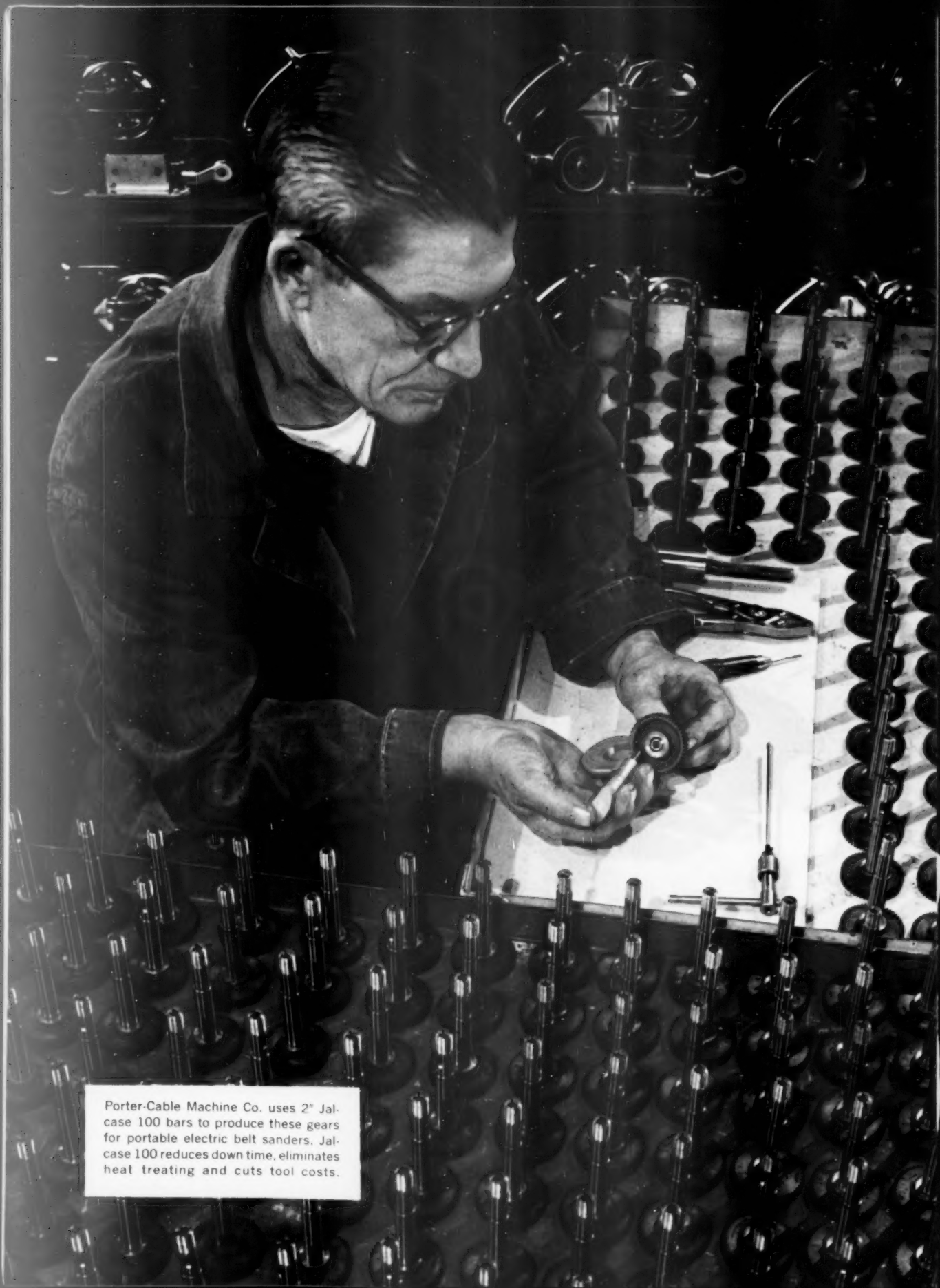
- "Ultralume"™ phosphors maintain maximum light levels for the life of the lamp.
- Special cooling chambers give *longer life*, as well as more light.
- New leads are chromium-vanadium plated to eliminate end-darkening.
- Smooth, slim design gives uninterrupted brightness all around the tube . . . much lighter weight for safer, easier handling.

- They're interchangeable . . . can be used in any fixtures designed for new high intensity lamps.

This all made the boss very happy, too. He found not only were morale and efficiency higher, but that he could save money while getting more light from the same number of fixtures.

Why not get the details for yourself? Just call your local Westinghouse agent, or write—Westinghouse Lamp Division, Dept. 57-L-5, Bloomfield, New Jersey.

YOU CAN BE **SURE**... IF IT'S **Westinghouse**



Porter-Cable Machine Co. uses 2" Jal-case 100 bars to produce these gears for portable electric belt sanders. Jal-case 100 reduces down time, eliminates heat treating and cuts tool costs.

"Jalcase 100 increased tool life 50%, eliminated need for heat treating"

... reports Porter-Cable Machine Co.

"J&L's Jalcase 100 meets our requirements for a steel that satisfies these four specifications:

1. Enough hardness for use in gears and jack shafts without need for heat treating;
2. High machinability for profitable operation without down time;
3. Uniform metallurgical structure;
4. Minimum distortion from residual stresses.

"Our shop experience with Jalcase 100, on six-position automatic machines with up to 21 high speed tools, shows tool life is increased at least 50%, hob life increased 30%," states Porter-Cable Machine Company official, Syracuse, N.Y.

Jalcase 100 is a new grade of Jalcase cold

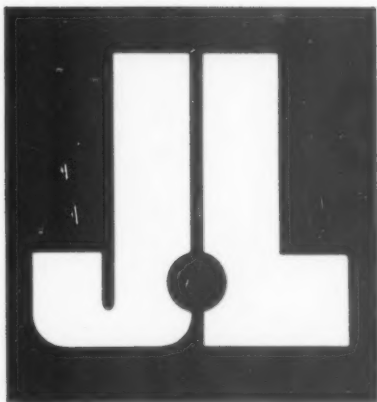
finished steel bars, specially processed for easy machinability with minimum distortion. It features guaranteed minimum yield strengths up to 105,000 p.s.i., guaranteed minimum hardness up to 248 Brinnell, and stabilized residual stresses. A new leaded product known as Jalcase 100-L is believed to be the most machinable high strength steel yet developed.

Call in a J&L steel specialist for a recommendation on the cold finished steel bars best suited for your specific operations. Chances are he can speed your production, cut your machining costs. See your local distributor, or write to Jones & Laughlin, 3 Gateway Center, Dept. 563, Pittsburgh 30, Pennsylvania.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

Where cold rolled steels originated in 1859



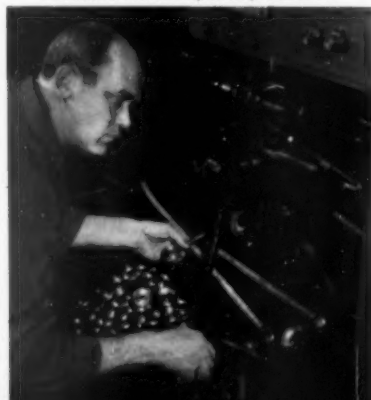
Helical gear cutting hobs last longer



Final J&L pre-shipment spot inspection



Increased tool life speeds production



Many bar sizes are used by Porter-Cable



High wear resistance is assured



AMERICAN LaFRANCE

A SINGLE SOURCE for the BEST in Industrial Fire Protection

EXTINGUISHERS and ENGINES



Dry Chemical
Extinguishers: 2, 5,
10, 20, 30 lb. En-
gines: 150, 350 lb.

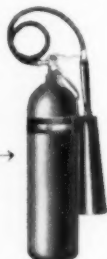
Water and Anti-Freeze

Extinguishers: 2½
gal. Pump Tanks:
2½, 5 gal. Engine:
40 gal.



Foam

Extinguishers: 2½,
5 gal. Engine: 40
gal.



Carbon Dioxide

Extinguishers: 2½,
5, 10, 15, 20 lb.
Engines: 50, 75,
100 lb.

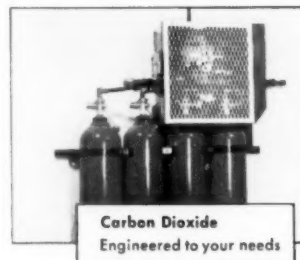


Soda-Acid

Extinguishers: 2½
gal. Engine: 40 gal.

Vaporizing Liquid

Extinguishers: 1,
1½ qt.



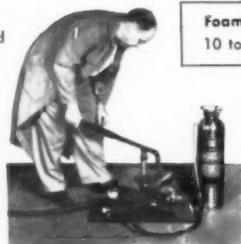
Carbon Dioxide
Engineered to your needs

FIXED SYSTEMS

Foamite
10 to 160 gal. capacity



Foamite Airfoam
Nozzles, liquid and
fixed systems.



Hydrostatic Test Pumps

Respiratory and First Aid Equipment



AMERICAN LaFRANCE

DIVISION OF STERLING PRECISION CORPORATION

ELMIRA, N. Y., U. S. A.

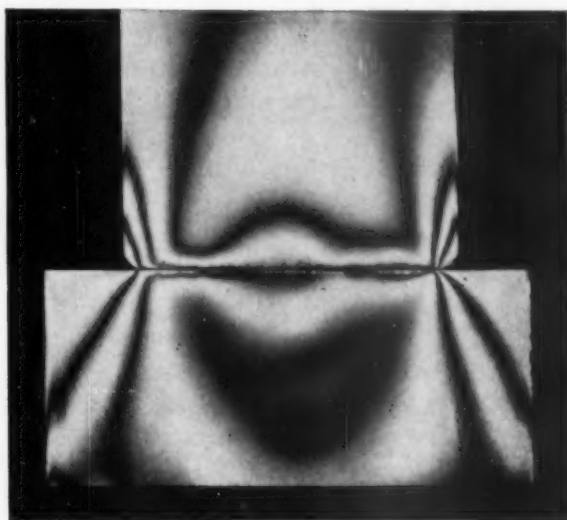
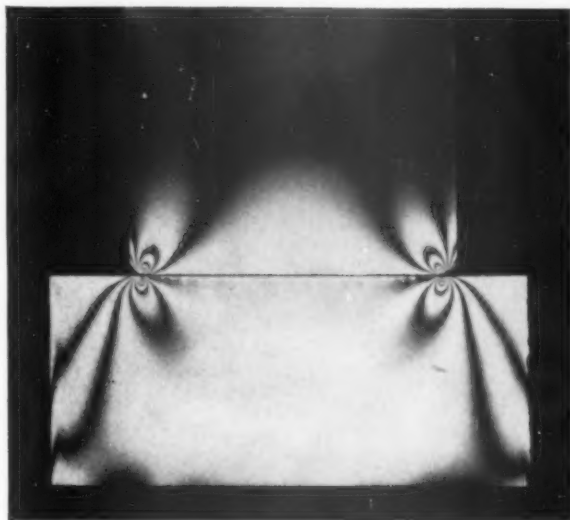
In Canada, LaFrance Fire Engine and Foamite, Ltd., Toronto, Ont.

WORLD'S LARGEST MANUFACTURER OF FIRE FIGHTING EQUIPMENT

For More Information Write No. 176 on Inquiry Card—Page 32



ROLLER BEARING LIFE AND CAPACITY LINKED TO STRESS DISTRIBUTION



These reproductions of photoelastic studies contain important evidence for every engineer and designer concerned with the performance and selection of roller bearings. In these photographs, the alternate dark and light areas, called fringes, indicate not only the magnitude of stress but also the stress distribution. The photographs were taken by Bower Research Engineers during a study of stress distribution in roller bearings.

The subjects represent rollers and raceways of two roller bearings under identical loads. The illustration at the left shows a roller of conventional design. The illustration at the right shows a Bower "Profiled" roller. That is, the roller is precision ground with a large radius generated along the body of the roller—a predetermined and controlled distance from each end.

The conventional roller photo (left) clearly shows how, under load, stress concentration builds up in and near the

roller ends. This is called edge-loading. Such areas of concentrated stress are the breeding grounds for metal fatigue and eventual bearing failure.

In the photo of the "Profiled" roller (right) stress lines can be seen uniformly distributed across the whole length of the roller and raceway. There are no points of excessive stress concentration, consequently no starting points for early fatigue. Such a "Profiled" roller exhibits a great advantage in improved load carrying capacity, a most important bearing requirement.

Under actual operating conditions, Bower "Profiled" roller bearings show a considerably longer life at higher

speeds and under greater loads than conventional roller bearings.

Because of this, and of other Bower features to be discussed in later technical reports, we suggest that you consider the advantages of Bower bearings in satisfying your future bearing requirements.

★ ★ ★ ★

Bower engineers are always available, should you desire assistance or advice on bearing problems. Where product design calls for tapered roller bearings or journal roller assemblies, Bower makes these also in a full range of types and sizes.

BOWER ROLLER BEARINGS

BOWER ROLLER BEARING DIVISION — FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICHIGAN



**WITH AIRCO'S
COMPLETE LINE OF CONTROL DEVICES FOR
ARGON, HELIUM, CO₂, AIRCOMATIC "75"**

							
Single-Stage Fixed Pressure Regulator Low in cost . . . sturdy. No flow rate tampering.	Flow Adapter —Exact gas flow needed. Prevents tampering . . . saves.	1/2" Station Valve for Flow Adapter —reliable shutoff. Compact, sturdy, versatile.	Fixed Pressure Two-Stage Regulator —exact gas flow needed. For two operations.	Two-Stage Flowmeter Regulator —complete flow coverage for virtually all uses.	Station Flowmeter —complete coverage. Low cost . . . extremely rugged.	Dual Range Flowmeter —complete coverage. Versatile, excellent readability.	Single-Stage Flowmeter Regulator —Rugged, compact. No heater required for CO ₂ .

VISIT OUR BOOTH 521 APRIL 7-9, '59
INTERNATIONAL AMPHITHEATRE, Chicago, Ill.

WELDING SHOW
Sponsored by AMERICAN WELDING SOCIETY, INC.
APRIL NATIONAL WELDED PRODUCTS MONTH

*75% Helium, 25% Argon

For full particulars on how to specify the most economical Airco Gas Equipment for your application, see your Authorized Airco Dealer, or write to Airco direct. Ask for the new Gas Flow Control Equipment Catalog. It's free.



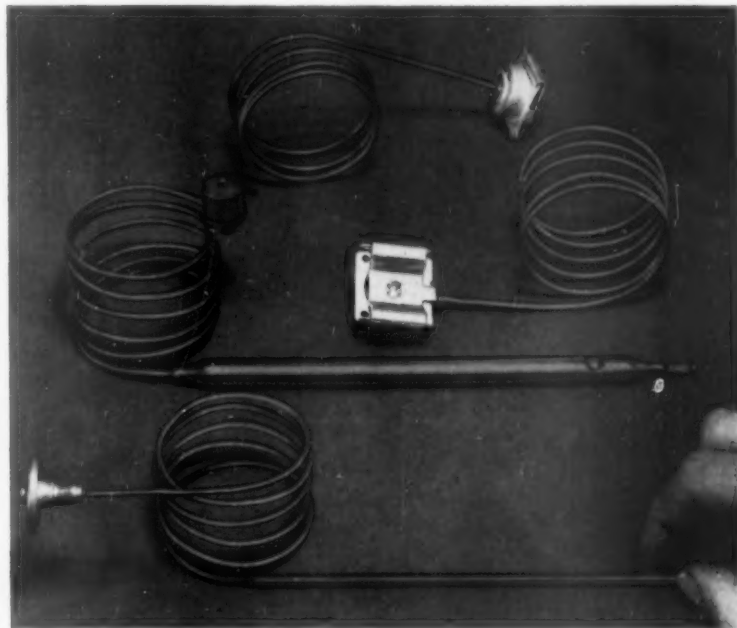
AIR REDUCTION SALES COMPANY

A division of Air Reduction Company, Incorporated
150 East 42nd Street, New York 17, N. Y.

Offices and authorized dealers in most principal cities

On the west coast—
Air Reduction Pacific Company
Internationally—
Airco Company International
In Cuba—
Cuban Air Products Corporation
In Canada—
Air Reduction Canada Limited
All divisions or subsidiaries
of Air Reduction Company, Inc.*

10 TO 15 NEW JOBS a week, each a different application, require a continuous program of evaluating the properties of metals and fabricating costs at Robertshaw-Bridgeport.



In making bellows (left) and temperature sensors (above) to meet ever-changing needs of control, appliance, and industrial equipment manufacturers, Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn., averages 10 to 15 new problems a week. Specifications vary widely in dimensions and physical characteristics. Dependable performance over long periods of uninterrupted service is vital—yet costs must be rigidly controlled.

So for quality with maximum economy in fabrication, materials must be matched precisely to the needs of each job. And in this, Robertshaw-Bridgeport looks to its suppliers for creative technical services. For many years, The American Brass Company specialists have been helping to select the correct alloys in phosphor bronze or brass and to meet fabrication problems in the making of bellows—to apply economically precision-made capillary tubing and other small-diameter copper tube in sensor assemblies. Through such services, The American Brass Company is constantly helping metal fabricators across the nation control quality while keeping costs down.

ARE you caught between cost reduction and quality control? Find out if you are buying metal properties you don't need. An Anaconda specialist may be able to suggest a lower cost alloy that fits the requirements of your job more closely. Or he may find that an adjustment of temper or a change in your fabrication methods can cut your costs. The services of Anaconda specialists are available through your American Brass representative. Call him in today, or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

ANACONDA®

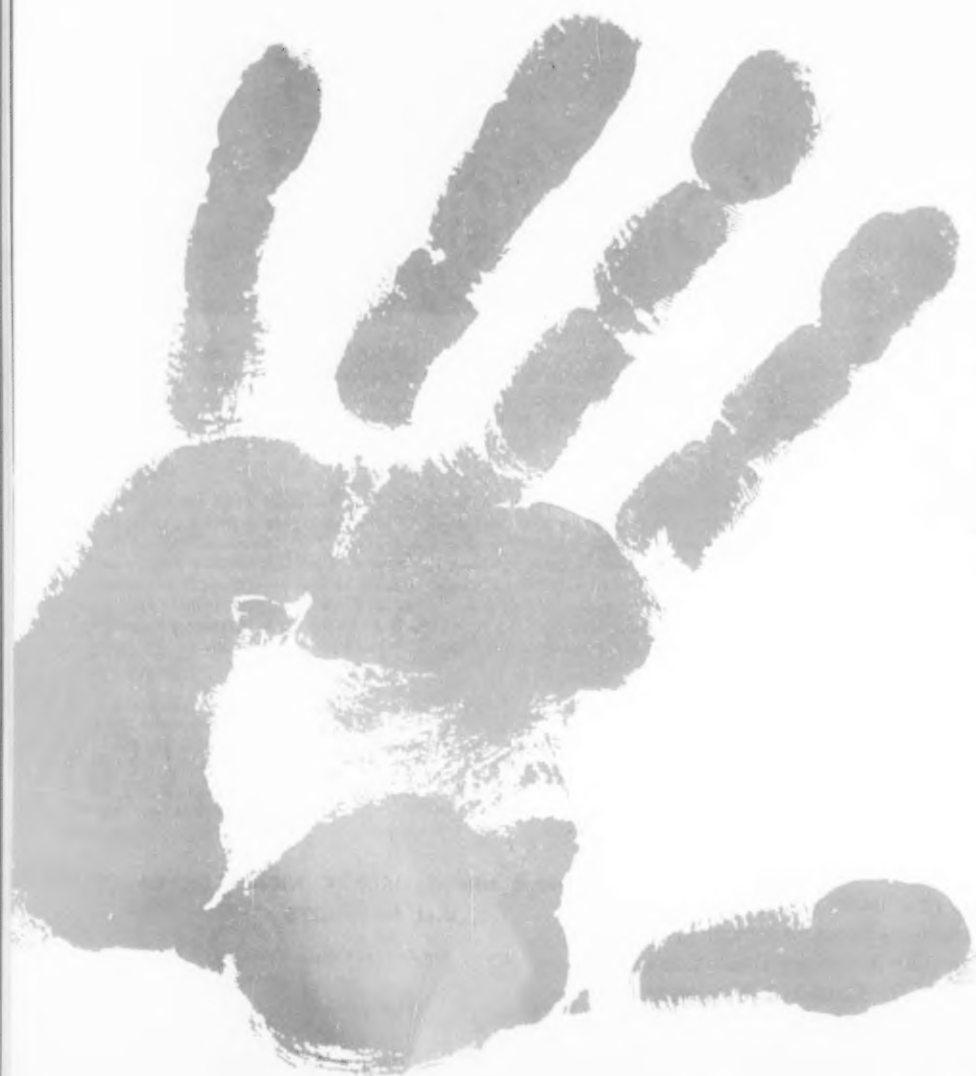
**COPPER BRASS BRONZE NICKEL SILVER
MILL PRODUCTS**

Made by The American Brass Company

For More Information Write No. 179 on Inquiry Card—Page 32
MARCH 16, 1959

For More Information Write No. 180 on Inquiry Card—Page 32→
39

STOP.



right here if you have a hand in plant paint purchases!

The handwriting's on the wall, in more ways than one, when it comes to modern plant maintenance. Today, more than ever, it is important that you find new ways to keep your material and labor costs in line! Which is why we're taking off the gloves to bring you some two-fisted facts on painting costs.

When you buy paint you pay twice . . . once when you purchase paint to do a job, *again* when you pay for labor to apply it. For this reason, it makes sense to specify a paint which not only looks good on your purchase order, but one that rings in with a new cost-cutting figure on maintenance crew time cards. And this is exactly what you buy when

you specify Barreled Sunlight Engineered Paints. Each one is *engineered* to go on quick and easy to save man-hours . . . engineered to withstand the roughest, toughest conditions . . . engineered to hold its color, finish and "fresh-paint" look longer than any other paint you can buy.

We'd like an opportunity to prove this to you—in your own plant—without obligation. The famed Barreled Sunlight "On-the-Wall" Test is designed to demonstrate the kind of money-saving performance you *should* be getting for your paint dollars. It costs you nothing and *can* save you plenty. Fill out the coupon now.

Barreled Sunlight



FOR A BETTER LOOKING, LONGER
LASTING PAINT JOB AT LOWER COST

BARRELED SUNLIGHT PAINT COMPANY

18-C Dudley Street, Providence 1, Rhode Island

I have a hand in plant paint purchases . . . tell me more about Barreled Sunlight Engineered Paints!

- ☐ Please have your representative call me to arrange a free "On-the-Wall" Test.
- ☐ Please send me your new "Quick Reference Guide" to Barreled Sunlight Paints.

Name

Company

Street

City State



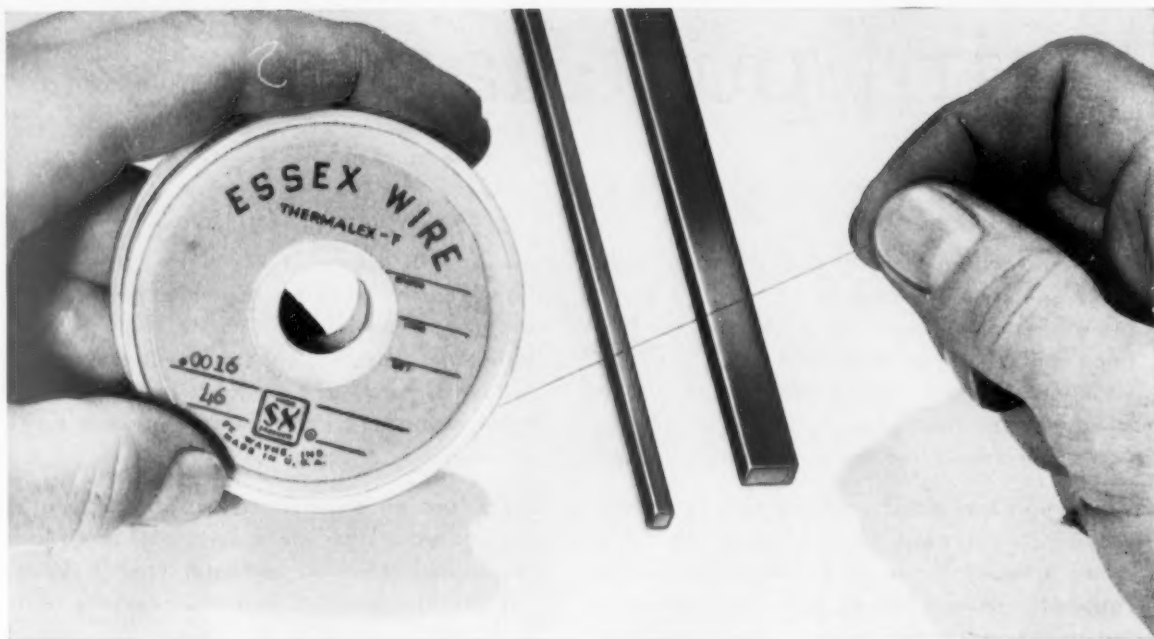
ESSEX

Now...all sizes and shapes
of **SX Magnet Wire**
for every "hot spot" application

Thermalex-F[®]

MAGNET WIRE

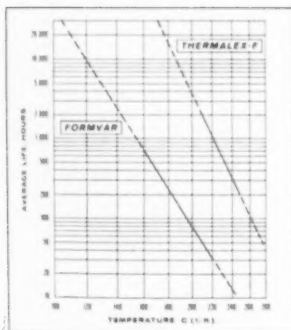
Class F (155°C)



**Rounds, squares and rectangulars also available
with single and double glass coverings**



VERSATILE GENERAL PURPOSE APPLICATION
Thermalex-F is not a special wire but has properties required for a general purpose application and can be used through the 105 C-155 C temperature range... Class A applications as well as Class F... eliminating the need for buying more than one type of magnet wire.



OUTSTANDING THERMAL STABILITY
A.I.E.E. #57 "Procedure for Evaluation of the Thermal Stability of Enamelled Wire" which is an accepted test, indicates a 30,000 hours life at 170°C for unvarnished specimens.

Thermalex-F, a Class F (155°C) magnet wire insulation developed by Essex, is now available in round wire from 11 to 50 AWG size and all Formvar sizes of square and rectangular. This full size range gives every manufacturer the versatility he needs in one insulation type for his exact application!

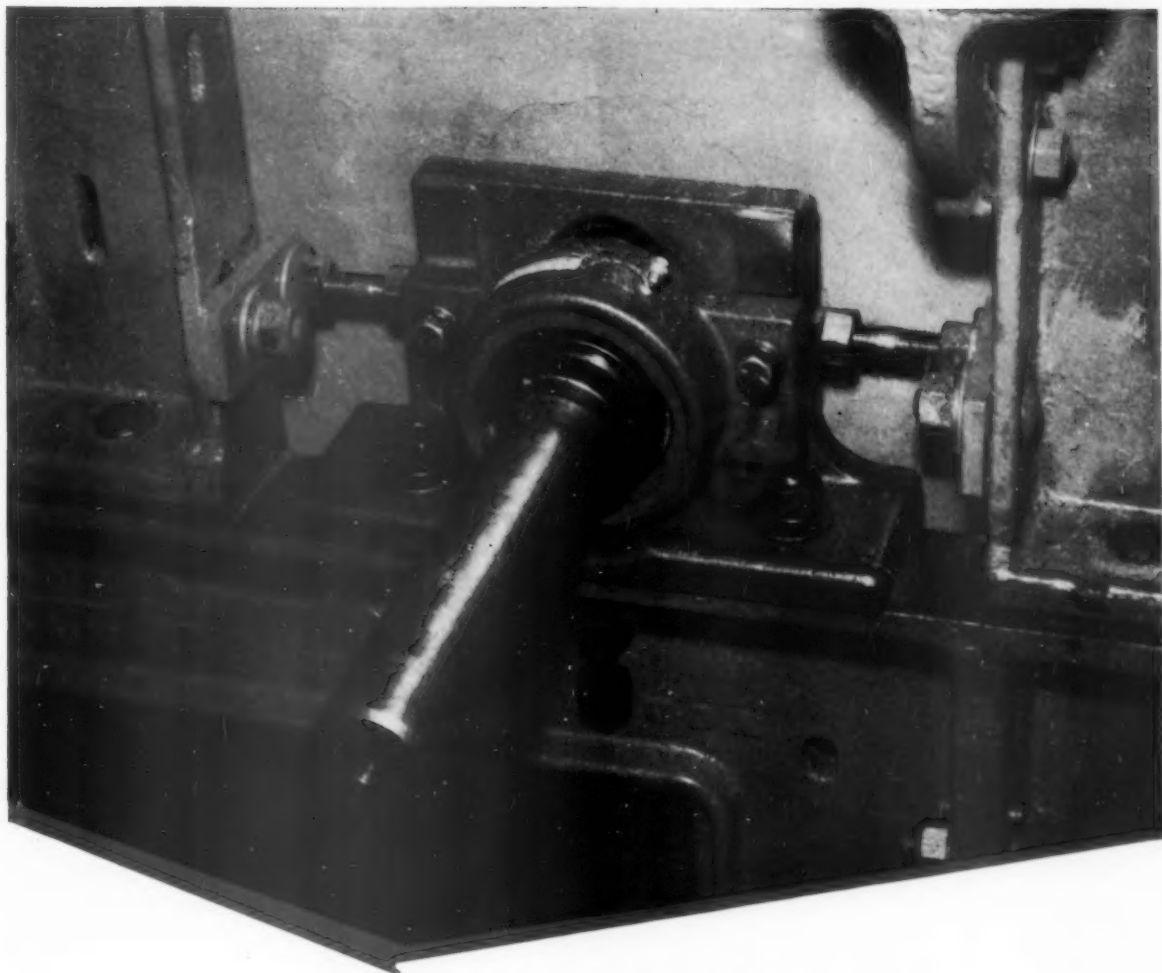


THE WIRE DESIGNED WITH THE FUTURE IN MIND

**Magnet Wire Division
ESSEX WIRE CORPORATION**
Fort Wayne, Indiana

Manufacturing Plants: Birmingham, Ala.; Anaheim, Cal.;
Fort Wayne, Ind.; Hillsdale, Mich.

National network of Warehouses and Sales Offices
... Call your local "Essex Man."



Bearings, Inc. designs and supplies anti-friction bearing conversion units for many applications

This sliding, take-up unit is installed on textile mill equipment. It illustrates one of many clean, practical fixtures our bearing engineers have designed to hold the bearings best suited to carry shafts with a minimum of maintenance and with low power consumption. Our customer is pleased with the success of this installation in cutting operating

costs, improving quality and increasing production. Your request for a Bearings, Inc. engineer to survey your machinery and recommend anti-friction bearing conversions where practical, will be promptly answered. It's a service we're glad to perform at no cost to you.

Call the Bearings, Inc. branch nearest you NOW!

BEARINGS, INC.

*Providing bearing service
in the North*

OHIO: Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Elyria • Hamilton • Lima • Lockland • Mansfield • Toledo • Youngstown • Zanesville
INDIANA: Ft. Wayne • Indianapolis • Muncie • Terre Haute • **PENNSYLVANIA:** Erie • Johnstown • Philadelphia • Pittsburgh • York
WEST VIRGINIA: Charleston • Huntington • Parkersburg • Wheeling • **NEW JERSEY:** Camden
NEW YORK: Buffalo, Balanrol Corp. • **MARYLAND:** Baltimore • **DELAWARE:** Wilmington

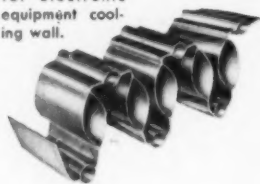
and

in the South

DIXIE BEARINGS, INC.

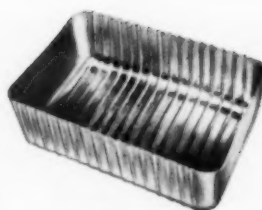
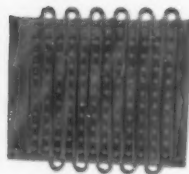
FLORIDA: Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville • **LOUISIANA:** Baton Rouge • New Orleans
N. CAROLINA: Charlotte • Greensboro • **S. CAROLINA:** Greenville • **TENNESSEE:** Chattanooga • Kingsport • Knoxville • Nashville

Section of Aluminum Tube-In-Strip combining refrigerant passages with air cooling for electronic equipment cooling wall.



Copper Tube-In-Strip used as a combustion chamber for water heater.

Copper Tube-In-Strip with return bends attached to produce a cooling plate.



This electronic cooling case of Revere Aluminum Tube-In-Strip was inflated after drawing.

REVERE *Tube-In-Strip* SCORES

NOW USED AS WATER-COOLED BUS BAR
in manufacture of
General Electric Semiconductor Rectifiers

HAS THESE 4 BIG MONEY-SAVING ADVANTAGES

- 1 Because it is a homogeneous mass Revere Tube-In-Strip eliminates the possibility of leaks.
- 2 User is able to obtain more efficient cooling.
- 3 If user finds it necessary to change cells it can be done without draining the system.
- 4 Revere Tube-In-Strip enables user to have a completely sealed system, thus eliminating O-rings or gaskets.

The use, by General Electric, of Revere Tube-In-Strip as water-cooled bus bar is still another of the myriads of ways this revolutionary product can be applied in industry.

The unique thing about Revere Tube-In-Strip is that it is a solid piece of metal, not two strips welded, brazed or bonded together. You buy

strip, fabricate it as you wish, stamping, bending or forming it, and then as a final operation inflation expands the integral channels into tubes. Expanding in the open, the tubes are round; by expanding into dies, the tubes can be made rectangular, fluted, half-round, hexagonal, etc.

Revere Tube-In-Strip saves on first cost, and in fabrication. New and improved designs are made possible. The web between the tubes conducts heat faster. The vastly increased structural strength means you can use lighter gauges, saving in weight and price.

Revere Tube-In-Strip is available in Copper, Copper-base alloys and Aluminum alloys. The Revere Technical Advisory Service and the Research and Development Department will gladly collaborate with you in taking full advantage of this marvelous new material.

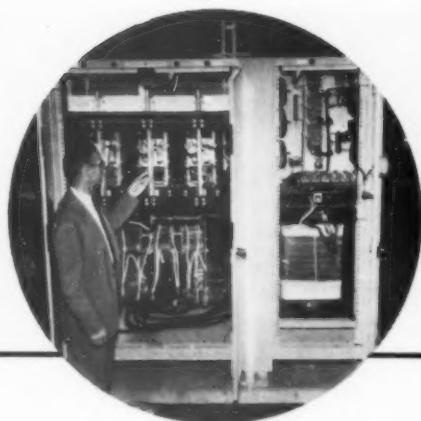
REVERE COPPER AND BRASS INCORPORATED



Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.

Copper Tube-In-Strip spiral containing both water and refrigerant passages for increased cooling efficiency.



Copper Tube-In-Strip and copper fin assembly for automobile radiator.



Copper Tube-In-Strip and finned stock assembled and then inflated into automotive air conditioning coil.



ANOTHER TRIUMPH!

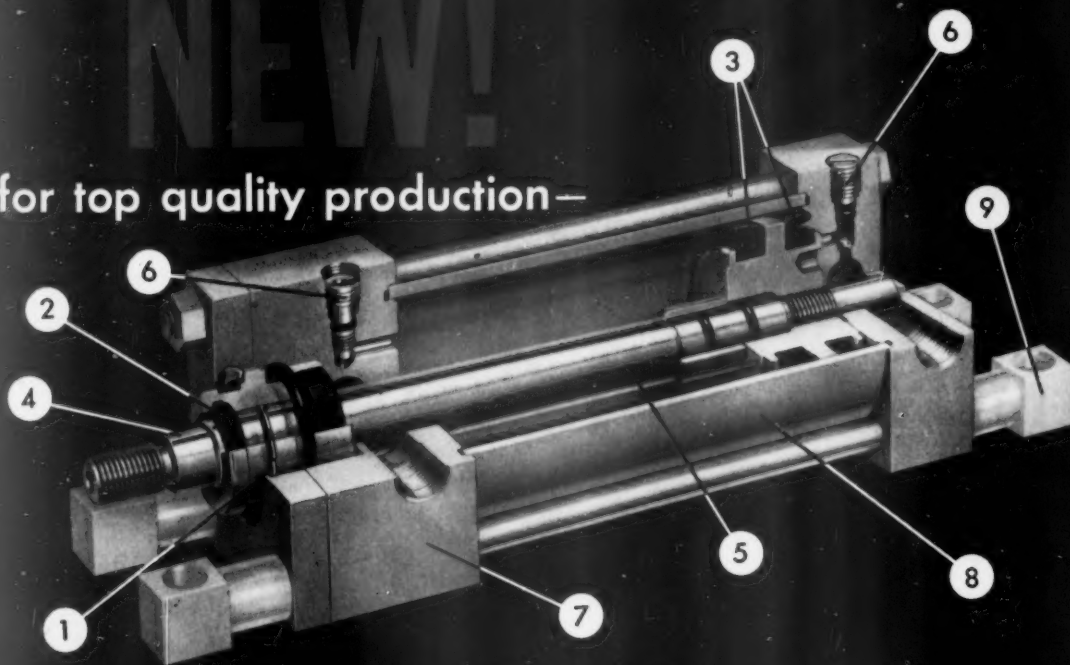
PHOTO IN CIRCLE ABOVE SHOWS water-cooled semiconductor power rectifier design with integrally mounted transformer as made by General Electric Company. Rated 150 volts, 4000 amps., d-c, it is used for copper refining.



(Above) **CROSS SECTION** of water-cooled bus, featuring improved cooling method. Dual, leak-proof water passages are formed in solid bus, made from Revere Tube-In-Strip, without the need for welding or brazing. They are located on each side of a section of bus to which silicon cells can be bolted without penetrating the coolant passages.

(Left) **OVERALL VIEW** of new sealed liquid-cooled bus illustrating manner of mounting several silicon rectifier cells. Unique "dry" mounting permits installation of cells without draining liquid from bus. Cells are individually attached to the bus with threaded stud and nut, simplifying the mounting of a cell, and making it unnecessary to disturb any of the other cells on the bus.

NEW!
for top quality production—



1. Bronze Bearing, with self-adjusting "U" Cup Piston Rod Seal for longer wear.
2. Rod Wiper protects Piston Rod Seal and keeps Cylinder clean.
3. "U" Cup Seals expand with pressure to provide positive seal with minimum friction.

4. Wrench Flats make for easy installation.
5. Ground, hard chrome-plated Piston Rods have minimum yield strength of 125,000 psi.
6. Self-locking cushion adjusting screw and ball check are below surface for protection . . . easily accessible.
7. For extra strength, Cylinder Ends and

- Mounting Plates are machined from bar stock and steel forgings.
8. Cylinder is precision-finished brass for extra heavy duty.
9. Variety of mountings can be interchanged—easily match any installation requirement.
10. Interchangeable with all JIC Cylinders.

SCHRADER SQUARE-END CYLINDERS

meet and exceed JIC specs . . . 250 psi air . . . 750 psi hydraulic!

Here's compact, versatile straight-line power. Just look at the features!

Use Schrader's new square-end double-acting cylinders for holding, positioning, moving work—for push, pull or lifting—for automating manual operations. In five sizes up to 4-inch bore, and with five interchangeable mountings, these "square-ends" are economical and versatile. Bolt, leg, flush, side flush or base . . . each JIC Cylinder will mount all five ways. Suitable for air

pressures to 250 psi, or hydraulically to 750 psi—available cushioned or non-cushioned.

You get safe, controlled, low-cost power with Schrader "square-ends"—another addition to the line of famous Schrader quality Air Control Products.

Complete stocks available locally—expert help to improve your air control hookups. Write for your complete specifications and data on these new "square-ends."

Bolt Mounting



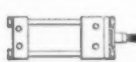
Leg Mounting



Flush Mounting



Side-Flush Mounting



Base Mounting



Schrader
a division of **SCOVILL**

A. SCHRADER'S SON
Division of Scovill Manufacturing Co.
473 Vanderbilt Avenue, Brooklyn 38, N. Y.

QUALITY AIR CONTROL PRODUCTS

Information For Your Catalog Files

ALUMINUM CONDUIT

Data on rigid conduit, couplings, and 90 degree aluminum conduit elbows. Diameter and length dimensions, weights, and packaging details are listed. Numerous applications are suggested, and standard installation procedures are presented.

Kaiser Aluminum & Chemical Sales, Inc.

Write No. 1 on Inquiry Card—Page 32

BAR AND TUBE MACHINERY

The 18-page two-color booklet describes bar and tube machinery. Bulletin 2533-JJ58 highlights billet peeling and chipping, centerless turning, bar and tube straightening, stretch straightening, wire straightening and cutting, and roll grinding. Twenty-eight illustrations are included.

Blaw-Knox Company

Write No. 2 on Inquiry Card—Page 32

CASTINGS

Bulletin #35 lists the scope of the applications of castings. The 32-page booklet contains 43 illustrations and a table of physical properties of the metals available.

Meehanite Metal Corporation

Write No. 3 on Inquiry Card—Page 32

CONTROLS

Catalog #14 gives size, weight, and rating information on motor controls. Illustrated with product pictures and containing wiring diagrams and dimensional drawings, the bulletin also has an index of catalog numbers and type identifications. One section describes replacement parts and another contains heater tables and motor charts.

Arrow-Hart & Hegeman Electric Company

Write No. 4 on Inquiry Card—Page 32

CONVEYORS

Bulletin 159 describes power and free overhead conveyors. The complete system, its components, and its dispatch are illustrated in detail.

Columbus McKinnon Chain Corporation

Write No. 5 on Inquiry Card—Page 32

COUPLINGS

An illustrated color 20-page catalog describing couplings for hydraulic and pneumatic applications. Bulletin Q.S.R. 58 discusses three types—straight through, single check-valve, and double check-valve. Details and cross-section drawings are given for each basic type. An extensive chart contains selection information, flow data, and pressure data.

Titeflex, Inc.

Write No. 6 on Inquiry Card—Page 32

GEAR SPEED REDUCERS

A 12-page illustrated catalog on double reduction hollow shaft worm gear speed reducers. Catalog No.

HSDR-58 contains unit dimensions, plans and elevations of all shaft arrangements, and tables of weights. Also listed are complete horsepower, torque and overhung load ratings, and AGMA service factors for selection.

Winsmith, Inc.

Write No. 7 on Inquiry Card—Page 32

MOTORS

A catalog describing a line of integral horsepower single phase motors. Lists ratings from $\frac{3}{4}$ to 20 hp, with pictures of open protected, totally enclosed fan cooled, and explosion proof frames. Bulletin 470-B also outlines the weatherizing treatment.

Robbins & Myers, Inc.

Write No. 8 on Inquiry Card—Page 32

MOUNTINGS

Bulletin No. 713 describes full bonded tube form mountings specially designed for vibration and shock control. Contains an application guide, performance characteristics, and detailed specifications.

Lord Manufacturing Company

Write No. 9 on Inquiry Card—Page 32

O-RINGS

A 20-page bulletin dealing with the design and application of O-Rings. Discussed are materials of construction, applications, and groove design. Bulletin AD-148 is divided into five sections.

Garlock Packing Company

Write No. 10 on Inquiry Card—Page 32

PULLEYS

Bulletin 35-D lists information on belt saver pulleys. Gives diameter, face width, minimum and maximum bore, approximate shipping weight, and list price of almost five hundred different sizes.

Sprout, Waldron & Co., Inc.

Write No. 11 on Inquiry Card—Page 32

STAINLESS TUBING

A technical report on applying light wall stainless steel tubing for main surface condensers in power plants. The 10-page report combines interpretive text material, complete tabular test data, and performance curve graphs. Outlined are test procedures and results.

Carpenter Steel Company

Write No. 12 on Inquiry Card—Page 32

STRAIN GAGES

The catalog lists strain gages, instruments, and accessories. Containing over 250 gage types, the bulletin includes complete electrical and physical specifications of each type, together with prices and quantity discounts. A separate section provides data useful in the selection of gages for various applications.

Baldwin-Lima-Hamilton Corporation

Write No. 13 on Inquiry Card—Page 32



TO BEAT THE CARRYOVER PROBLEM ON CONVEYOR BELTS

here's how self-cleaning ROTA-MASTER® brushes cut downtime and maintenance costs

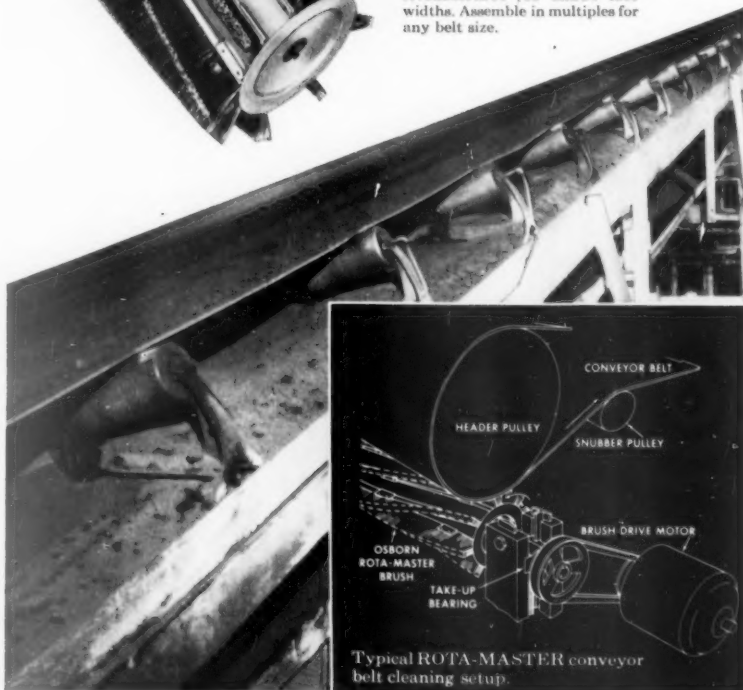


CARRYOVER on rubber and fabric conveyor belts can cause destructive wear—and add costly downtime hours spent in frequent cleaning. Osborn Rota-Master® Brushes automatically and efficiently prevent buildup of such materials as chemicals, food, tobacco chips, core sand, coke and ore on belts, rolls, snubber pulleys and return idlers.

Easy to install and adaptable to any system—Rota-Master Brushes clean conveyor belts with a unique, flexible sweeping action that does a thorough job. Brushes are self-cleaning, simple to adjust for correct brushing pressures.

An Osborn Brushing Analysis—at no obligation—can pinpoint exactly how you can cut costs and simplify your conveyor cleaning. Write for details and a copy of the Rota-Master Brush booklet. The Osborn Manufacturing Company, Dept. U-41, Cleveland 14, Ohio.

OSBORN ROTA-MASTER® BRUSH.
Available in 16", 18" and 24" face widths. Assemble in multiples for any belt size.



Typical ROTA-MASTER conveyor belt cleaning setup.

BRUSHING MACHINES • BRUSHING METHODS
POWER, PAINT AND MAINTENANCE BRUSHES
FOUNDRY PRODUCTION MACHINERY

Osborn Brushes

Catalog Files

SPEED DRIVES

A four-page bulletin describing the operation and application of wide-range, adjustable-diameter, wedge-belt sheaves. All installation and mounting dimensions are listed. The catalog also briefly discusses auxiliary equipment for adjustable speed drives.

American Pulley Company

Write No. 14 on Inquiry Card—Page 32

SWITCHES

Bulletin 14B8112B describes construction features of instrument and control switches. Lists advantages of both maintained and spring return contact types. Discusses switches rated for 20 ampere continuous capacity with 600 volts insulation.

Allis-Chalmers Manufacturing Co.

Write No. 15 on Inquiry Card—Page 32

V-BELTS

Bulletin A-695 describes space saving V-Belt drives. The 44-page catalog is illustrated with photographs and engineering drawings. Tables of pre-engineered drives are included, along with tables for horsepower capacities, belt speeds, center distances, and sheave diameters.

Dodge Manufacturing Corporation

Write No. 16 on Inquiry Card—Page 32

VANADIUM ALLOYS

A booklet detailing compositions and applications of ferro-vanadium alloys. It describes the commercial grade of vanadium metal used for alloying in nonferrous metals and special low-impurity ferrous metals. Information is given on standard sizes for alloys and metal, methods of packaging, and availability of service and supplies.

Vanadium Corporation of America

Write No. 17 on Inquiry Card—Page 32

WATER CHILLERS

Bulletin 8325 describes chillers for air conditioning and industrial cooling applications. The 16-page catalog discusses and illustrates outstanding mechanical specifications. The selection data provided covers the full range of type CD chiller sizes. Installation-type drawings are also included.

American-Standard

Write No. 18 on Inquiry Card—Page 32

6 alloys = 95% of today's engine bearing requirements



Steel backs, lined with:

- FEDERALOY A-200 Aluminum alloy
- FEDERALOY H-24 Copper alloy
- FEDERALOY H-35 Copper alloy
- FEDERALOY H-50 Copper alloy
- FEDERALOY B-100 Tin-base babbitt
- FEDERALOY L-200 Lead-base babbitt

This group of sleeve bearing alloys permits the engineer to design for all conventional commercial applications. At the same time, he can meet his performance and cost requirements.

Each of these alloys has been thoroughly

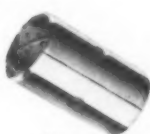
proved and accepted by leading engine builders. Our production of millions of sleeve bearings each year assures you of the highest quality, efficiency and economy. Complete engineering service. A copy of the "Sleeve Bearing Design Guide" will be sent free on request. Address:

FEDERAL-MOGUL DIVISION

FEDERAL-MOGUL-BOWER BEARINGS, INC., 11077 SHOEMAKER, DETROIT 13, MICHIGAN



Spacer
Tubes



Bimetal
Bushings



Plain
Bushings



Precision
Thrust Washers



MARCH 16, 1959

For More Information Write No. 185 on Inquiry Card—Page 32

49

FOR SEMS

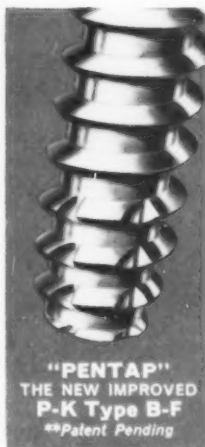


All Types of SEMS

*SEMS with dished
toothed periphery washer*

3 New, Improved THREAD-CUTTING Screws from P-K

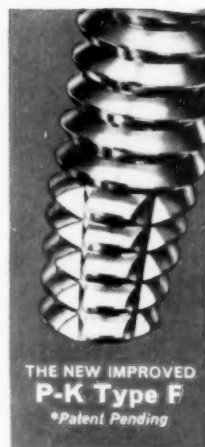
The five cutting flutes on the new, improved P-K Type "F" and "BF" reduce pressure development by 80 percent! The completely formed threads on these screws have sharper cutting edges, and 5 deep flutes that are of continuous depth. These features make for better clearance of the accumulated material and assure minimum stresses in driving and avoid the possibility of stripping or galling.



"PENTAP"
THE NEW IMPROVED
P-K Type B-F
***Patent Pending*



THE NEW
P-K Type L
U.S. Patent 2,350,346



THE NEW IMPROVED
P-K Type F
**Patent Pending*

BUY P-K

and Pre-assembled Fastener-Washer Combinations

HERE ARE JUST A FEW OF THE WIDE VARIETY OF SEMS AND STAPS AVAILABLE FROM P-K



Whatever you require in pre-assembled washers... SEMS, and neoprene or nylon washer STAPS... in thread-forming and thread-cutting tapping screws, or machine screws... with slotted, Phillips or Hex heads... P-K can supply them all through your local P-K "Bulk-Stocking" Distributor.

P-K SEMS reach your assembly line pre-assembled, ready for instant use. Washers cannot come off—can never be mislaid or misplaced—insures washers on the screws... not on the floor! Double inventory and double parts handling is completely eliminated.

P-K SEMS can be hopper fed for automatic driving. Inspection rejects due to omitted lock washers are impossible—fastenings stay tight and firm. P-K SEMS assure concentric washer seating.

STAPS® are standard P-K fasteners, pre-assembled with nylon or neoprene washers for effective control of leaks, squeaks, crazing and electrolysis, in all types of metal structures and assemblies.

Your nearby P-K "Bulk-Stocking" Distributor can meet your needs—any time—in any quantity. Call him for samples and complete information.

TYPE F*, the new, improved hardened thread-cutting screws have been developed by P-K for use in friable, granular or brittle material. The pilot, with its five tapping flutes, cuts a standard machine screw thread as the screw is turned in. The Type F is ideal for making fastenings to ferrous and non-ferrous castings, bronze or brass forgings, heavy gage sheet metals, structural steel, plastics and resin-impregnated plywood.

"PENTAP"***, the new, improved P-K Type B-F (formerly F-Z) combines the five thread-cutting flutes of the Type F screw with the coarse pitch, widely spaced threads of the P-K Type B. The thread-cutting "PENTAP" Type B-F distributes cutting pressure evenly, lets chips drop to the bottom of the hole, prevents cracking of material. It is designed for making fastenings to comparatively thin sections and bosses in friable and brittle plastics.

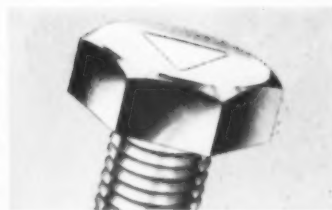
TYPE L† is a completely new and improved thread-cutting screw developed by Parker-Kalon for use in nylon. The Type L functions as a combination thread-cutting and thread-forming screw... in that it cuts a small amount of the nylon to allow the full diameter threads to form. Type L offers a particular advantage in nylon assemblies which must be disassembled for service, because the P-K Type L can be removed and replaced without stripping or galling.

Get your **FREE** samples of P-K SEMS and new, improved thread-cutting screws. Contact your nearby P-K "Bulk-Stocking" Distributor today.

PARKER-KALON® fasteners

Keep American Industry at Work... Buy P-K... made in U.S.A.

PARKER-KALON DIVISION, General American Transportation Corporation, Clifton, New Jersey. Offices and warehouses in Chicago and Los Angeles.



Trimmed Hex Head Tapping Screws and Machine Screws

For many applications, Trimmed Hex Head Screws may be preferred over Indented Hex Heads for appearance. Furthermore, from a service standpoint, there is less wear and tear on driving tool sockets and, also, because of the increased contact area on the face of the hex, greater driving torque can be exerted. Available from #2 x 1/8" up to and including 1/2" x 1 1/4" sizes, with or without pre-assembled washers.

QUALITY CONTROL

another advantage of

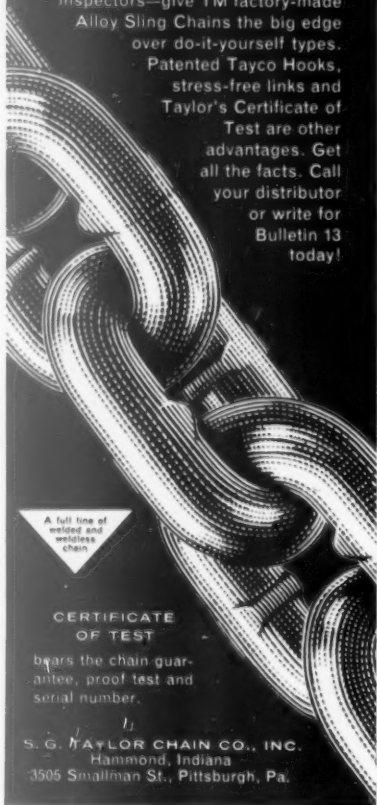
factory-made

alloy sling chains!

Taylor's well-known quality control—gamma ray testing . . . controlled heat-treating . . . professional inspectors—give TM factory-made Alloy Sling Chains the big edge over do-it-yourself types.

Patented Tayco Hooks, stress-free links and Taylor's Certificate of

Test are other advantages. Get all the facts. Call your distributor or write for Bulletin 13 today!



A full line of welded and welded chain

CERTIFICATE OF TEST

bears the chain guarantee, proof test and serial number.

S. G. TAYLOR CHAIN CO., INC.
Hammond, Indiana
3505 Smallman St., Pittsburgh, Pa.

Taylor Made
CHAIN SINCE 1873

For More Information Write No. 204 on Inquiry Card—Page 32

Letters To The Editor

FLEXIBLE MILITARY BUYERS

I appreciate your sending me a copy of your editorial on purchasing and security (February 16 issue). I am glad indeed to have your very thoughtful and helpful support for S. 500.

Leverett Saltonstall
United States Senator (Mass.)
Washington, D. C.

• Most readers will notice that the number of the Senate Bill mentioned in the editorial ("Purchasing and Our Security") is different from the one mentioned in Senator Saltonstall's letter. At the time the February 16 issue went to press, the bill had not been assigned a new number and the number from the previous Congress was used. Readers who are interested in learning more about the bill or in reading the bill itself should use the number S. 500 in referring to it.

\$100,000 SAVING

I read with considerable interest in your Letters to the Editor (February 2 issue), under the title "A Fair Day's Work", the problems of a purchasing executive regarding his purchasing department.

It seems apparent that the writer is in serious trouble and is somewhat inexperienced in regard to purchasing. His best bet would be to obtain the services of a purchasing consultant or hire an experienced assistant.

Either way I am sure he could save his company hundreds of thousands of dollars.

Charles Ewin
Sharon, Penna.

WHO AUDITS THE AUDITORS?

The September 1, 1958 issue of PURCHASING Magazine contains a very interesting article entitled, "Dishonesty in the Purchasing Department."

We are presently planning an internal auditing seminar for our employees and would like to include appropriate handouts as part

of our technical information.

May we have your permission to reprint the above-mentioned article for this purpose?

W. E. Bergstrom
General Auditor
Caterpillar Tractor Co.
Peoria, Illinois

• Permission granted.

MATERIALS MANAGEMENT

I have just finished reading the second in your series of articles on the theory and practice of materials management in the February 2 issue of PURCHASING Magazine. I think this is an excellent series, well written and thought provoking.

Donald W. Weitz
Purchasing Department
Westinghouse Electric Corp.
Sharon, Penna.

I am very pleased with your articles on materials management. In my work with A.M.A. and N.A.P.A., as well as with Burroughs, I have found a great amount of misunderstanding regarding the nature of materials management, its place in the management picture, and its relationship to purchasing.

I, personally, believe that you are doing a great service to the purchasing man by helping to get materials management in its right perspective.

We hear so much from people, who would speak for the purchasing profession, regarding this matter of purchasing either taking over or being taken over by this function. If you, in your articles, can do something just to dispel this grave misapprehension, I am sure that you have accomplished a great deal.

Congratulations on your excellent articles; a good job well done.
Dwight Brooks
Mgr. Purchasing Administration
Burroughs Corporation
Detroit, Michigan

For More Information Write No. 187 on Inquiry Card—Page 32→

PURCHASING



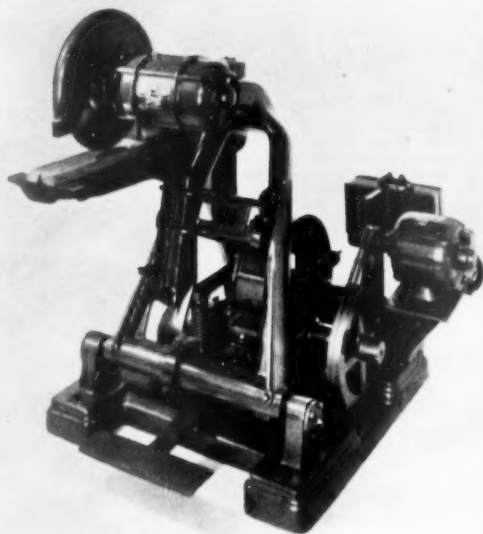
*"the fast way
out of today's
profit squeeze*

*is through
the use of
more efficient
materials which
cost less to
machine and
fabricate, yet
produce a
better product..."*
*i.e. Federated
Tenzaloy
the high-strength
aluminum alloy
that needs no
heat treatment*

ASAARCO

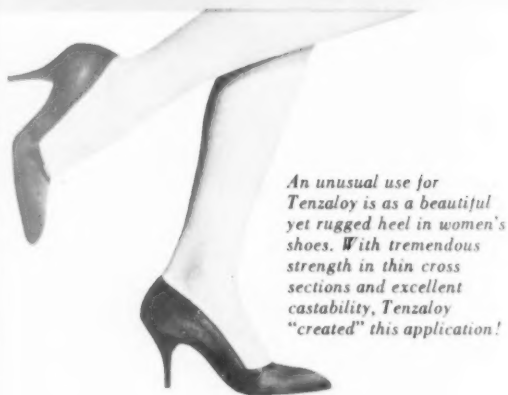
SEE NEXT PAGE

Federated TENZALOY



The vibration, strain, and abuse undergone by the movable arm of this cut-off saw calls for Tenzaloy, more and more the most qualified material for hard usage applications of this type.

Tenzaloy replaced a more expensive alloy in casting this airplane turntable when increasing size and weight of today's planes required a casting so large (4000 pounds!) that no heat treating equipment could handle it.



An unusual use for Tenzaloy is as a beautiful yet rugged heel in women's shoes. With tremendous strength in thin cross sections and excellent castability, Tenzaloy "created" this application!

Corrosion engineers expect these New York street signs to stay rust-free and shiny for years. In fact, they are unconditionally guaranteed maintenance-free for 15 years!



Today's cooks choose shiny lightweight utensils cast in Tenzaloy over old style cast-iron pieces which often left ugly rust streaks. With corrosion-free Tenzaloy, there's no chance of contamination—ever!

Tenzaloy contributes great strength in thin cross sections to these handsome modern chairs. Its castability in single-piece complex shapes, opens up wide new possibilities for the furniture designer.



the self-aging aluminum alloy gives you castings with greater strength—



for less! Tenzaloy the self-aging aluminum alloy needs no heat treatment! If your aluminum castings are too large or too intricate for heat treatment, if your heat treating facilities are limited, if you need superior strength than you get from ordinary heat-treated alloy, specify "Federated Tenzaloy" developed by Federated to meet the need for a superior aluminum alloy that ages at room temperature. Tenzaloy eliminates rejects due to warpage, expansion, and internal stresses caused by quenching. Tenzaloy finished properties are stable, proved by conclusive test data over a ten-year period. No special foundry techniques are required. No fluxes. Castability is excellent with sand cast and plaster molds and many permanent molds. Tenzaloy will not "grow," produces corrosion-resistant castings with excellent polishing characteristics and anodizes clear white.

Specify Federated Tenzaloy for:

1. High "as cast" properties—no heat treatment required to get the properties of heat-treated castings.
2. High yield strength—Tenzaloy can be stressed beyond other high-strength, non-aging alloys.
3. Excellent ductility, particularly before aging—if it is desired to cold work or form castings, it should be done as soon as possible after casting, preferably within a day or so.
4. High impact and shock resistance.
5. Excellent machinability—better than the common aluminum-copper alloys. Machinability maximum after aging several weeks, or after artificial aging at 250°F. If machine operations are performed too soon after casting, some tendency to gumminess will be experienced.
6. Superior corrosion resistance—equivalent to the aluminum-silicon alloys.
7. Excellent polishing characteristics—will produce silvery-white castings that take a high polish.
8. Takes a white anodized finish—castings can be dyed all available colors; porosity-free surfaces are essential for satisfactorily utilizing current commercial dyeing procedures.
9. No special foundry technique required—handles like any other aluminum alloy. Heat to required temperature, skim and cast. Magnesium additions normally not required.
10. Good castability—produces sharp impressions, clean castings.
11. Permanent molds can be used—thin-walled, restrained, intricate shapes should be avoided.
12. Plaster molds can be used—properties superior to other aluminum alloys will be obtained. Excellent castability.
13. No fluxes needed—skimming alone is sufficient. A flux may be used to assist in dross removal where necessary. All stirring and excessive turbulence during pouring should be avoided.
14. Dimensionally stable—Tenzaloy does not grow as do other aluminum alloys containing copper and silicon as major alloying elements.
15. Internal stresses normally found in high-strength heat-treated castings are not present because quenching is not required.
16. Can be brazed by standard techniques used for wrought alloys; oven or flux-dip method.

COMPOSITION AND COVERING SPECIFICATIONS

The nominal composition of Tenzaloy is: Copper—0.8%, Zinc—8.0%, Magnesium—0.4%, Aluminum—balance.

Tenzaloy is covered by SAE 315, ASTM Specifications B179-58 alloy ZC81A-B for Ingot; B108-58T alloy ZC81B for Permanent Mold; and B26-58T alloy ZC81A for Sand Casting. Tenzaloy is covered in Government Specifications by MIL-A-17129 (Ships) Class 8, MIL-A-12033 (ORD) alloy ZC81A, and Federal Specification QQ-A-6016 Class 22M.



Unlike heavy old-style fixtures, awning hardware cast in lightweight Tenzaloy defy rust and outdoor wear. No painting needed; the bright finish is permanent!



ASAFRACO

AMERICAN
SMELTING
AND
REFINING
COMPANY

Ready to talk TENZALOY?

(or about any one of the many others of Federated Metals' complete line of aluminum casting alloys)

Write for Tenzaloy Bulletin No. 103, Aluminum Casting Alloys Handbook Bulletin No. 101, Federated Metals Division, 120 Broadway, New York 5. Or the Federated Sales Office, or plant near you

ALTON, ILLINOIS

Alton Phone: Alton 5-2511
St. Louis phone: Jackson 4-4040

BALTIMORE 24, MARYLAND

Highland & Eastbourne Aves.
Phone: Orleans 5-2400

BIRMINGHAM, ALA.

416 Dalton Drive
Phone: Fairfax 2-1802

BOSTON 16, MASS.

Statler Office Bldg.
20 Providence Street
Phone: Liberty 2-0797

CHICAGO, ILL. (WHITING)

123d St. & Indianapolis Blvd.
Chicago phone: Essex 5-5000
Whiting phone: Whiting 826

CINCINNATI, OHIO

1603 Carew Tower
Phone: Cherry 1-1678

CLEVELAND, OHIO

Hanna Building
1422 Euclid Avenue
Phone: Prospect 1-2175

DALLAS, TEXAS

Phone: Adams 5-5034

DETROIT 2, MICHIGAN

522 New Center Building
7430 2nd Avenue
Phone: Trinity 1-5040

EL PASO, TEXAS

1213 Mills Building
(Asarco Mercantile Co.)
Phone: 3-1852

HOUSTON 29, TEXAS

9000 Market Street Road
P.O. Box 24038
Phone: Orchard 4-7611

LOS ANGELES 23, CALIF.

4010 East 26th Street
Phone: Angelus 8-4291

IN CANADA: Federated Metals Canada, Ltd.

Toronto, Ont., 1110 Birchmont Rd. Scarborough, Phone: Plymouth 7-3246
Montreal, P.Q., 1400 Norman St., Lachine, Phone: Melrose 7-3591

MILWAUKEE 10, WIS.

4608 West Burleigh St.
Phone: Hilltop 5-7430

MINNEAPOLIS, MINN.

Phone: Tuxedo 1-4109

NEWARK, NEW JERSEY

150 St. Charles Street
Newark phone: Mitchell 3-0500
New York phone: Digby 4-9460

PHILADELPHIA 7, PENNA.

1336 Phila. Nat'l Bank Bldg.
Broad & Chestnut Sts.
Phone: Locust 7-5129

PITTSBURGH 24, PENNA.

615 Gross Street
Phone: Museum 2-2410

PORTLAND 9, OREGON

1900 N.W. 18th Avenue
Phone: Capitol 7-1404

ROCHESTER 4, NEW YORK

Triangle Building
335 East Main Street
Phone: Locust 2-5250

ST. LOUIS, MISSOURI

Mail Address: Alton, Ill.
Phone: Jackson 4-4040

SALT LAKE CITY 1, UTAH

700 Crandall Bldg.
Phone: Empire 4-3601

SAN FRANCISCO 24, CALIF.

1901 Army Street
Phone: Atwater 2-3340

SEATTLE 4, WASHINGTON

101 Dakota Street
Phone: Main 3-7160

WHITING, IND. (CHICAGO)

123d St. & Indianapolis Blvd.
Whiting phone: Whiting 826
Chicago phone: Essex 5-5000

ASAARCO

FEDERATED METALS DIVISION OF

American Smelting and Refining Company, 120 Broadway, New York 5, N.Y.

Polyken tapes-- experienced in solving a raft of problems

(maybe they can solve yours)



Paper-backed tapes . . . masking, protecting, packaging.



Plastic-backed tapes . . . insulating, sealing, splicing.



Cloth-backed tapes . . . holding, binding, water-proofing.



Specialty tapes . . . heat-sealing, bonding, reinforcing.

See the versatility of modern Polyken adhesive tapes. All have solved tough production problems . . . economically. For help with your problem, look in the yellow pages of your phone book for the Polyken Industrial Tape Distributor nearest you. Or write to the Polyken Sales Division, 309 W. Jackson Blvd., Chicago 6, Illinois. Dept. P-3.

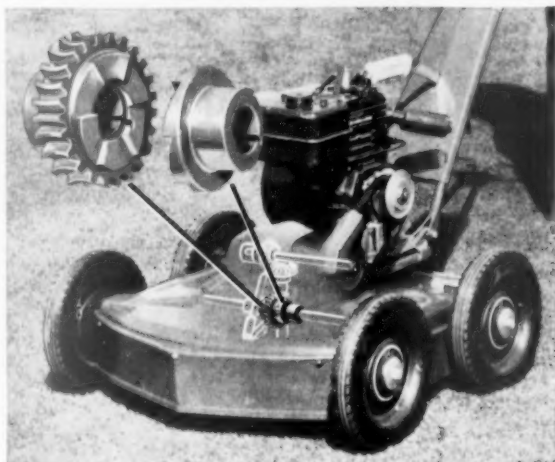
Polyken[®]

INDUSTRIAL TAPES

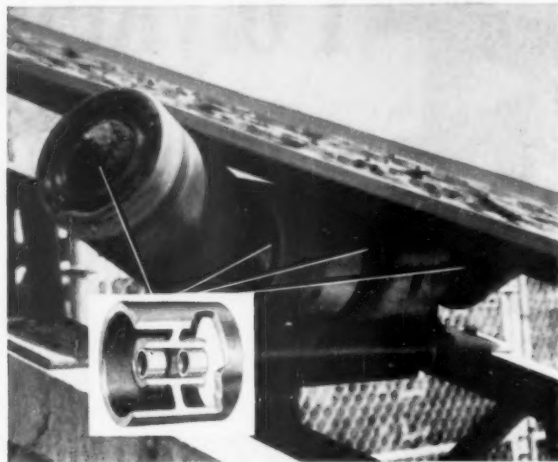
THE KENDALL COMPANY

Polyken Sales Division

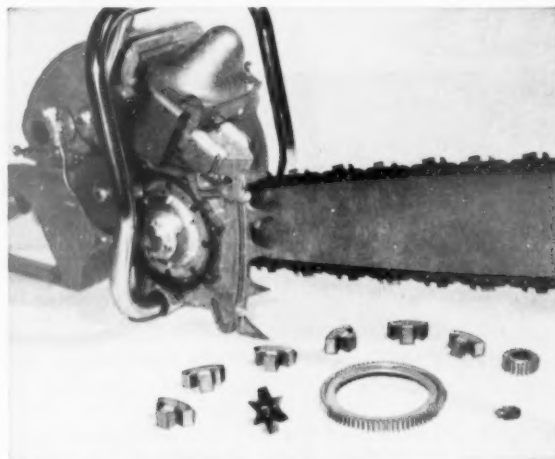
BOOST PRODUCT APPEAL with **OILITE**



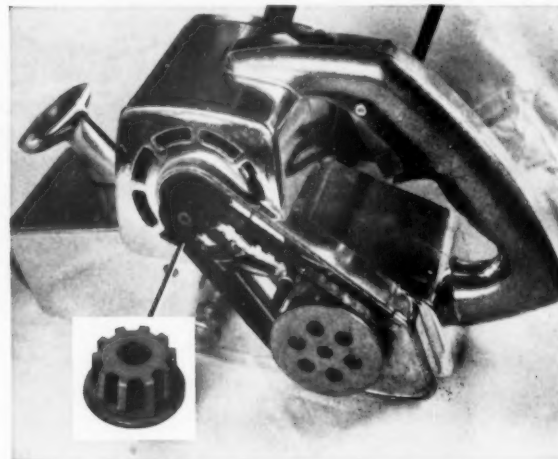
These 2 Oilite components now do the work of 4 former machined parts . . . contribute new economy, less upkeep.



Not one "squeak" from this conveyor . . . yet the dirt-encrusted Oilite bearings haven't been lubricated in 7 years.



Tough, wear-resistant Oilite gears, sprockets and clutch shoes keep costs low . . . make power saw more dependable.



The Oilite pulley of this heavy-duty belt sander provides yet another example of improved performance at less cost.

Quality-built OILITE® parts and bearings add sales appeal to many fine products. For one thing, close tolerance Oilite parts wear less, weigh less and are quieter running . . . and Oilite bearings are tougher, maintenance-free.

** Only Chrysler Makes Oilite*

For another, Oilite components drastically reduce cost by eliminating material waste and costly machining. Why not contact your Oilite representative today? Look for him in the Yellow Pages under "bearings — Oilite" or write Dept. F-3.



SINCE 1929



the most trusted name in powder metallurgy!

AMPLEX DIVISION

CHRYSLER CORPORATION, DETROIT 31, MICHIGAN
SELF-LUBRICATING BEARINGS • PRECISION PARTS • METAL FILTERS • FRICTION UNITS

For More Information Write No. 189 on Inquiry Card—Page 32

PURCHASING



HALT

heat damage to carbide tipped tools

SIMONDS PLATE MOUNTED WHEELS

(OPEN STRUCTURE)

with NEW V9 BOND



Simonds GC Electrodon (green silicon carbide) grinding wheels are made with very open structure by a new method to produce the desired voids or pore spaces . . . for cooler, faster grinding. The new V9 vitrified bond is a chemically designed glass bond more controllable for more uniform grinding action. Furnished plate-mounted for all grinders. Typical specifications for carbide tool grinding: GC60-H12-V9 for roughing; GC120-H12-V9 for finishing.



CALL YOUR SIMONDS DISTRIBUTOR

Proven products
Dependable know-how
Quick supply

SIMONDS ABRASIVE COMPANY

Tacony & Fraley Sts., • Philadelphia 37, Pa.
Division of Simonds Saw and Steel Co.

BRANCHES: CHICAGO • DETROIT • LOS ANGELES • PHILADELPHIA • PORTLAND, ORE. • SAN FRANCISCO • SHREVEPORT



MARCH 16, 1959

For More Information Write No. 190 on Inquiry Card—Page 32

59

POWER-UP! calls for
modern maintenance



New Super Coilife gives rewind motors extra life

Moisture, acids, alkalis and other contaminants are locked out once and for all with Super Coilife epoxy encapsulation. For full motor protection, Super Coilife can be applied to random wound stators, rotors and armatures. Super Coilife's mirror-like finish will not crack or craze under severe operating conditions.

Because of its unusually low viscosity, this new solventless epoxy completely penetrates the interstices, through the slots, thoroughly coating and protecting the windings. Since 1953, when Westinghouse introduced Coilife® epoxy encapsulation, research, engineering and development have evolved this new and improved product—Super Coilife, an exclusive process.

Only Westinghouse Repair Plants can give the right "thin-wall" thickness for each type and class of winding to give maximum heat transfer away from the windings. Before you send out your next rewind call your Westinghouse representative for the complete story or write for Booklet B-7622: Westinghouse Electric Corporation, P. O. Box 868, 3 Gateway Center, Pittsburgh 30, Pa.

*Trade-Mark

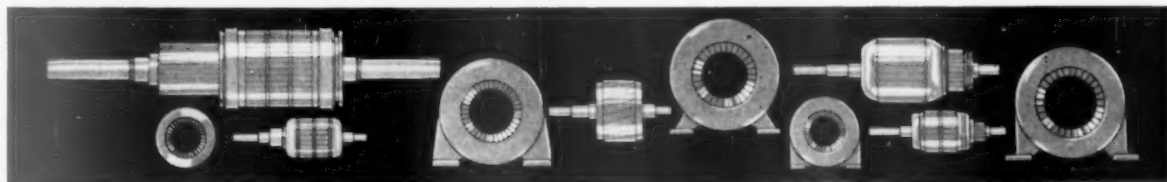
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For More Information Write No. 191 on Inquiry Card—Page 32

PURCHASING

Purchasing People In The News

J. Bishop & Co., Platinum Works, Malvern, Pa., has appointed **Joseph F. Cortez** purchasing agent. Mr. Cortez joined the company in 1957 as buyer in the purchasing department. Before coming to Bishop he was associated with the Crown Cork & Seal



J. F. Cortez

Co., Inc., Can Division, Philadelphia, Pa. for three years. Here he served as buyer for maintenance, mill supplies, electrical supplies, material handling, production items and chemicals.

Sutherland Paper Company Kalamazoo, Mich., has announced the appointment of **Howard Luikens** as general purchasing agent. Mr. Luikens succeeds **D. D. Bachelder** who died January 7, 1959. **Don Hughes** will continue in his present position as assistant purchasing agent.

Two recent appointments in the purchasing department of Pesco Products Division, Borg-Warner Corporation, Bedford, Ohio; have been announced.

William C. Erwin has been named purchasing agent in charge of the production purchasing section. He will be responsible for all purchases of production parts and packaging materials, and for the sale of scrap and surplus.

Heading the non-production purchasing section will be **George T. Weidinger**. His duties will in-

clude purchase of all non-production items, sub-contract machining, and service contracts.

Russell White has been appointed assistant purchasing agent-controls for Hagan Chemicals & Controls, Inc., Pittsburgh, Pa. Mr. White has been coordinating outside purchasing activities for the company's regulation division since 1957. He was formerly a buyer for the Scaife Company, Oakmont, Pa., and Gem and Sheplar Manufacturing Companies, Pittsburgh. He also worked as an expeditor for Gulf Oil Corporation's purchasing department.

American Hardware Corporation, New Britain, Conn., has announced the promotion of **Arkaline A. Silverio** to assistant purchasing agent and the appointment of **Paul F. Campbell** as metal buyer. They both will report to **Eugene D. Emigh**, purchasing agent.

Mr. Silverio previously was metal buyer for the corporation. Paul Campbell comes to the corporation from the sales department of the Chase Brass and Copper Co., Waterbury, Conn.

Fort Pitt Bridge Works, Pittsburgh, Pa., has announced a reorganization of its purchasing procedures. It has named **A. J. Bodenharn**, manager of purchases. Previously purchasing activities were carried on in two departments, one concerned with materials, the other responsible for procurement of all other requirements. Under the new arrangement all purchasing activities will be conducted in a single department. It will be known as the purchasing department. Mr. Bodenharn was purchasing agent in charge of items other than materials. He has been with Fort Pitt Bridge Works since 1924. He is a

former president of the Pittsburgh Purchasing Agents Association. He has also served as a director of the National Association of Purchasing Agents.

John F. Pullo, Jr. has been appointed purchasing agent at Hoffman Laboratories Division, Hoffman Electronics Corporation, Los Angeles, Calif. Mr. Pullo was formerly purchasing agent for the San Diego Division of Stromberg-Carlson. Prior to that he held purchasing supervisory positions with the Rochester, N. Y., division of Stromberg-Carlson, Tracer Lab, and Raytheon.

Permatex Company, Inc., Huntington Station, N. Y., has appointed **Kenneth Carpenter, Jr.**, as purchasing agent. Mr. Carpenter joined the company in 1955



K. Carpenter

as assistant to the treasurer. Within a few months he had become general office manager. From there he advanced to his present position. He began his business career with the W. T. Grant Company where he was active in store management for six years.

**SEE PAGE 164 FOR MORE
PURCHASING PEOPLE IN
THE NEWS**

For Accuracy In Your Spring Steel

Use UDDEHOLM

**The Spring Steel
Used To Measure
Accuracy**



Feeler Gages are used as a *standard* of accuracy—good reason why so many of them are made from Uddeholm spring steel. Their own tolerance limits are extremely close—and feeler gage manufacturers have long depended on Uddeholm to supply this accuracy.

Uddeholm feeler gage steel is typical of the quality you can expect from *all* Uddeholm spring steels—not only in dimensional accuracy, but in superior flatness, straightness of edge, and surface and edge finish. In performance too, Uddeholm spring steel will give your product longer life, greater fatigue resistance.

From Warehouse Stocks...

Uddeholm spring steels are available annealed or hardened and tempered in a wide variety of grades, sizes, tolerances and finishes. Widths run from $\frac{1}{8}$ " to $16\frac{1}{4}$ "; thicknesses from .001" to .125". Slitting, edge-filing and heat treating facilities are also available at warehouse.

UDDEHOLM SPRING STEELS

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PHILADELPHIA: Frank T. Campagna, 1418 Walnut St., PEnnypacker 5-2114

DETROIT: Warren H. Nugent, 17304 Lahser Road, KENwood 5-6340
PITTSBURGH: Lohmeyer Steel Co. 345 Mount Lebanon Blvd., LOcust 3-0122

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DIVISIONS

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FOB—"filosofy of buying"

YOU MAY not be able to legislate morality, but apparently you can insure it after a fashion. Announcement has just been made of an "insured deal" plan adopted by a group of 100 automobile dealers in a large metropolitan area. In an effort to "stabilize prices and trade-in values" and presumably promote the common good, the dealers will issue an insurance policy at no cost to the customer to guarantee that the original deal, including trade-in, will be honored when the time comes for delivery.

Well . . . we're hoping for the best, but we'll sure study the fine print on that insurance policy.

THE EDITORS of Time Magazine and a number of British journalists assigned here have been having a poison-pen-pal correspondence over how accurate a picture of American life and manners the latter have been giving their readers. Personally, we're neutral. Time has rarely been known to let the facts interfere with making a story interesting. So they've little to complain about when our overseas cousins simply follow the best traditions of a good portion of the British daily press and season their despatches lavishly with sensationalism.

There are, however, some astute, literate, and highly entertaining observers of the American scene writing for British publications. One of the best is on the staff of The Economist, a brilliantly written and edited journal. The temptation to quote some opening remarks from its review of U.S. events in 1958 is irresistible:

"To put first things last, it is appropriate to begin by recalling the fate of the sack dress. Here was an innovation that naturally aroused the darkest apprehensions in that noted observer of the shape of life, the American

For More Information Write No. 209
←on Inquiry Card—Page 32

male. Here also was a place where political bipartisanship found perhaps its firmest footing. Mr. Adlai Stevenson, the titular and indestructible leader of the Democrats, speculated that the sack had been designed by the cunning Russians to create unrest among American men and undermine the national way of life. Months later his observation was confirmed, from the Republican side, when Mrs. Eisenhower, hearing a fashion commentator say that the sack was the first feminine fashion ever killed by the objections of husbands, was heard to exclaim: "She's so right."

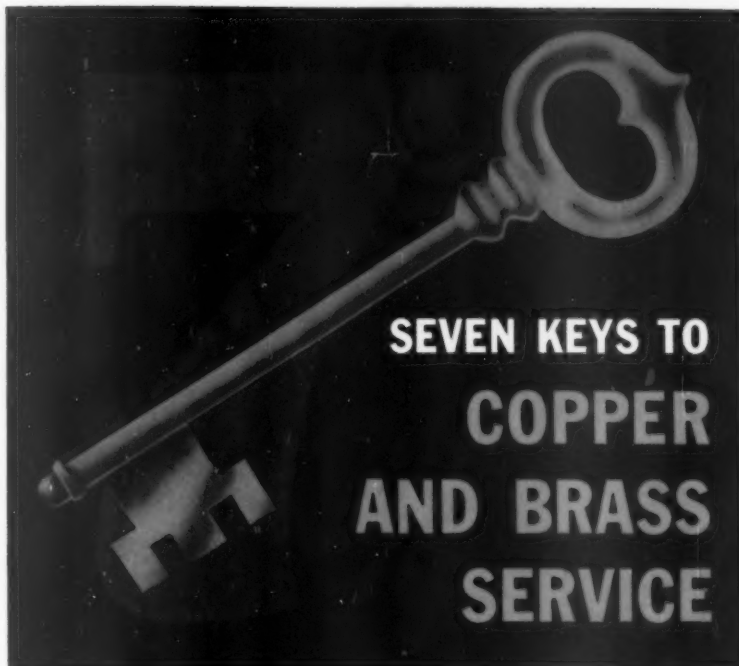
"The garment industry, of course, had too substantial an investment in the sack to permit Democrats, Republicans or husbands to liquidate it outright. As the year ended sack dresses still hung limply in some shop windows and the less timid matrons ventured to the cocktail parties of the holiday season clad in sacks, if not ashes. But all agreed that the brief reign of "that dress" was over. The sack was merging into the more clinging lines of the "empire style." Rather than imitate a hundred pound bag of potatoes or an expectant mother of quintuplets, the American woman was now free to try and impersonate the Empress Josephine. Few could deny that she was a more inspiring model."



OH, PUBLIC RELATIONS! What crimes are committed in thy name! The Long Island Rail Road has just announced a new emblem and slogan. The emblem shows Dashin' Dan, L.I. commuter, complete with briefcase, presumably panting madly after his train. The railroad (?) describes Dan as always late for his usually on time train.

The only way to nail a lie as bold-faced as that one is to look at the record. The Long Island is quite adept with statistics in making its claims, so we'll follow their lead and offer some of our own. These are based on one man's commuting experience of the past 13 years. Just multiply everything that follows by about 100,000 (the number of daily commuters on the L.I.) and you'll have the facts. Since the end of World War II, this is what late Long Island trains have brought him:

- 275 cold dinners;
- 413 suspicious looks from wife waiting at station;
- 87 attacks of severe claustrophobia from getting caught in jam in the black hole of Calcutta called the Long Island level of Pennsylvania Station while a couple of fumbling maintenance men tried to repair what the railroad calls "train trouble" and clear the one miserable tunnel allotted to them;
- 38 attacks of frostbite and 29 attacks of heat prostration from long periods of waiting on the open platform of Jamaica Station for overdue connections;
- \$93.50 extra expense for telephone calls to home explaining that Dad would be late;
- Continual attacks of high blood pressure aggravated by announcements that trains he had been waiting for were "annulled." (This actually means they've been annihilated. They don't exist, so you don't have to enter them on your late record. There's one mild compensation in this situation, however. Occasionally the reason for annulment announced over the public address system is funny enough to cause you to forget your troubles for a while, e.g., "The 5:47 to Port Jefferson has been annulled due to lack of engine."



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sheet - strip - bars
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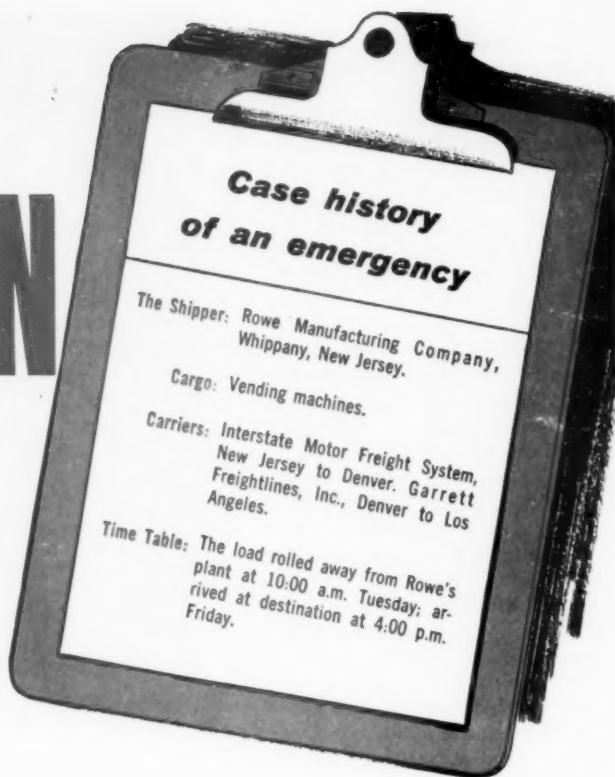
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For More Information Write No. 210 on Inquiry Card—Page 32

THIRD AFTERNOON DELIVERY

Coast to Coast!



When the chips are down and you urgently need exceptionally fast service, you can get it from Interstate System just like Rowe Manufacturing did. Here's how that traffic was handled:

As the shipment left Rowe's plant, Interstate's long-line private telephones were humming, arranging for power changes at Bedford, Pa., Norwalk, Ohio and Chicago.

Rowe's load went through the Chicago gateway without delay — in and out of the city in less than four hours.

While the shipment sped across the plains, Garrett Freightlines, Interstate's West Coast carrier, was alerted. The interchange was made smoothly at Denver, and the shipment sailed through the mountains to Los Angeles.

FOR YOU, TOO: For swift, safe, dependable service to big cities and small towns — either coast-to-coast or short distance — use Interstate System.

Your local Interstate System man is listed in the Yellow Pages. Give him a call!

Three reasons why Interstate moves so fast!



IN AND OUT OF CHICAGO IN LESS THAN 4 HOURS. Interstate System's new terminal at Cicero, Ill., eliminates inconvenient bottlenecks. Departures can be scheduled at least every 4 hours.



MUSCLE EQUIPMENT. Up-to-date, rolling stock like this new 40-foot trailer and Gross tractor are in service throughout the Interstate System.



FULL-TIME TELEPORTATION CONTROL. Private long-line telephone circuits maintain 24-hour contact with all terminals in the system, enabling dispatchers to pinpoint shipments in minutes.

MORE THAN A TRUCK LINE...
A TRANSPORTATION SYSTEM



**INTERSTATE
MOTOR FREIGHT
SYSTEM**

GRAND RAPIDS, MICHIGAN



In the vacuum-pourer shown above, the melt is poured into a low-pressure atmosphere in which the molten stream is dispersed—releasing undesirable gases and other substances.

**Special alloys, low hydrogen
content steels, finished products—
available on short notice
from Standard**

Even in the face of today's extremely critical requirements in metallurgy, Standard Steel Works has maintained its great reputation for quality and service.

With our electric furnace—and the new vacuum-pouring degasser recently placed in operation—we at Standard have facilities in keeping with industry's demands for steel in all applications.



Samples of vacuum-poured steel are tested for gas content in the analytical laboratory apparatus shown above.

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MARCH 16, 1959

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TIMKEN®



Bearings come into our ultra-modern shipping center for routing by speedy, custom-made conveyor systems like these.

WORLD'S FASTEST BEARING SHIPMENTS START RIGHT HERE!

When you buy Timken® tapered roller bearings you get the fastest service in the whole bearing industry. It took a lot of doing to make the fastest service even faster. We had to integrate a giant electronic computer with our ultra-modern \$3,000,000 shipping center at Bucyrus, Ohio. Result: a whole new concept in warehousing, order processing and shipping. And thanks to electronics, we can acknowledge most of your orders—with a shipping date—within 24 hours. There's no shipping delay. And even the invoicing is faster.

It's just one more reason why Timken bearings are your No. 1 bearing value. The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*



First in bearing value for 60 years

1. Quality you can take for granted
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NEW FIRST IN B E A R I N G S

Highlights of This Issue

✓ Big-Time Purchasing

One of the bigger and better purchasing departments in the country is only a few years old. The company was started only after World War II and its purchasing wasn't really fully organized until five years ago. Since then, however, the new department has made great strides in purchasing philosophy and practice. What it has done and what it plans are the stuff of big-time purchasing, not just because of its size but because of the broad view it has of the function. In this issue we present a full scale study of the department, with special emphasis on these areas:

Organization—How the argument over centralization vs. decentralization is settled by compromise in a multi-plant company. The relationships between plant purchasing agents, works manager, and headquarters purchasing. See page 73.

Freedom of Action for Plant P.A.'s—How much control should staff exercise over line when its responsibility is primarily functional? See page 76.

Cost Reduction—Arbitrarily imposed cost reduction targets didn't produce the desired enthusiasm or results among purchasing people in the divisions. But when they were allowed to set their own goals the program began to pay off handsomely. See page 80.

Inventory Management—Some helpful techniques for controlling stores and reducing investment in inventory. See page 82.

What Kind of Buyers?—A large company's ideas on how to select, train, and evaluate the performance of purchasing personnel. What to do about the trained buyer who can make a career elsewhere in the company.

✓ Materials Management IV

The fourth in our series of articles on materials management deals with a basic but delicate problem: how to convince everyone else in the plant that your interest in the concept isn't just a cover for a big power grab. It outlines a 7-point program for winning support for your approach to materials management. See page 90.

Coming in Future Issues

More on Purchase Order Terms—How Swift & Company Buys—Purchasing at Dow Chemical's Texas Division—Annual Value Analysis Issue (June 8)

For More Information Write No. 196
←on Inquiry Card—Page 32
MARCH 16, 1959

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a Lighting Specialist who can show you how to LUSTRA-lite for greatest economy!

LUSTRA'S superior design and construction insure that LUSTRA double duty lamps burn brighter... longer... greatly reduce maintenance costs. LUSTRA actually adds to profits with GUARANTEED performance! Ask the LUSTRA MAN!

At last! The First Color-True
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Here's the engineer's dramatic lighting answer to the color control problem—Lustra Northlite—the first fluorescent to approximate the desirable lighting of the artist's skylight. This unique lighting permits every industry, every store, every producer of color-true products... in printing, textiles, or plastic... in department stores, dress salons, furriers, milliners, haberdasheries... in sales areas, work areas, display areas... to change from the present over-blue or over-red lamps to 24-month-guaranteed Lustra Northlite, approximating 5500°K. temperatures to a point where your color guess-work is ended. Now available in all standard sizes... for your present standard fixtures!

Send immediately for the full technical details on the amazing new LUSTRA NORTHLITE fluorescents!

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LUSTRA—AMERICA'S DATED LAMPS LL109

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Good bet: You're paying for lubricants you don't need

Does this case sound familiar to you?

The purchasing department of a midwest firm was forced to buy lubricants on the recommendation of every department head, foreman or even operator. Inventory—often duplicated—was scattered all over the plant, yet shortages in one spot were never related to overstocks in another. The result: costly overstocking, extra handling, increased dangers of misapplication.

Purchasing realized they had a problem—

instituted an Organized Lubrication Plan. Now they use 20 lubes instead of 97, have cut their purchase orders from 300 to 12 per year. Direct savings are estimated at thousands of dollars annually.

Can Organized Lubrication save money in your plant? Contact your local Texaco Engineer or write for "Management Practices that Control Costs via Organized Lubrication." The Texas Company, 135 East 42nd Street, New York 17, N. Y. Dept. **P-81**.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

TUNE IN . . . Metropolitan Opera
Radio BROADCASTS
every Saturday afternoon

For More Information Write No. 197 on Inquiry Card—Page 32

The Lions Lie Down With The Lambs

THE AIR is always full of sweet talk about the tolerance and understanding that should exist between purchasing and sales. It has been doggedly affirmed for years over tons of chicken and thousands of gallons of liquid refreshment that buyers and sellers are two sides of the same free enterprise coin. Banquet halls across the land have rung with declarations that the destinies of purchasing agents, salesmen and America are inseparably linked, etc., etc.

That kind of oratory is basically harmless. But when it really masks a mutual contempt and suspicion it is pointless, wasteful, and a drag on real progress between the two functions.

It is heartening to note a trend toward briefer, franker and more realistic analyses from both sides. That's the way it was a few weeks ago, for example, at the annual Purchasing-Sales Dinner of the Purchasing Agents Association of New York. J. D. "Duke" Chesney, N.A.P.A. Vice President for District 8, kept flowery phrases out and got right to the point in greeting the sales executives.

The fences are down, he said, between salesmen and purchasing agents. Advances in the science and technique of buying and selling have made the two interdependent. Mutual distrust has given way to elementary business logic.

Frederick W. Tranfield, President of the New York Sales Managers Club was equally succinct in his reply. He acknowledged that a better climate existed between purchasing and sales. Much of it is due, he said, to the growth in competence and stature of the purchasing agent. This has been so great and so rapid, he declared, that sales managers have had trouble recruiting and training enough salesmen of equal calibre.

All this is good to hear. It's even more encouraging to overhear a new note of genuine respect for purchasing in casual conversations. (Involuntary eavesdropping in lobbies, bars, and restaurants is invaluable in detecting a trend!)

A note of warning: it's not your title, or your office, or your function that earns or loses this real respect. It's you. If you're doing your job as intelligently, honestly and scientifically as you know how, you can be confident that the great majority of sales people will respect you. And if they respect you they'll help you do your job even better. It's as simple as that.

Paul V. Farrell

What's New

IN STEEL FROM STOCK

New developments will help give you increased value in buying metals from Ryerson during 1959. Below are just some of the new additions to Ryerson's comprehensive stocks and services.

NEW FASTER MACHINING TUBING...Ledloy® 170—fastest machining steel tubing ever produced, average speed of 170 s.f.m. And only Ryerson has it for shipment from stock. Users report increases of 25% in productivity... longer tool life... improved finish. Sizes available to date from 1" to 2½" O.D. with maximum $\frac{3}{8}$ " wall thickness.

NOW EVEN FASTER MACHINING LEDLOY BARS...new Ledloy 375 bars boost machinability to record averages of 375 s.f.m. Large stocks of this new steel supplement Ryerson stocks of regular Ledloy 300 free-machining steels to give you widest selection. Available from Ryerson stocks in rounds from $\frac{1}{4}$ " to 1", hexes from $\frac{1}{4}$ " to $\frac{5}{8}$ ".

TWO NEW PLANTS IN TEXAS...the former plants of Vinson Steel and Aluminum Co. in Dallas and Houston are now a part of the Ryerson organization. These plants, already well stocked and equipped, are now backed up by the unequalled facilities of the 18 other Ryerson plants across the nation. This means Texas metal users can now draw on stocks of more than 12,000 kinds, shapes and sizes of steel and aluminum. Also available, full line of industrial plastics and metalworking machinery.

NEW ALUMINUM STOCKS...are being added in Ryerson plants at Cleveland, Philadelphia and Los Angeles. Aluminum stocks at other Ryerson plants have also been greatly expanded.

NEW STOCKS OF T-1 ALLOY PLATES...in two types: to 321 minimum BNH and to firebox quality specs. "321" gives maximum resistance to impact and abrasion. Five sizes available from 3/16" through $\frac{5}{8}$ ". "Firebox" is for applications requiring high strength and toughness... meets ASME code case 1204-3 for pressure vessels. Available in nine sizes from $\frac{1}{4}$ " through 2". Both types offer good weldability.

STAINLESS EXTRUDED ANGLES...now available from Ryerson. They offer better surface and resultant lower polishing costs... cross-section tolerances less than half those of rolled angles for better forming into rings... no increase in price over rolled angles.

INCREASED VALUE IN STAINLESS FROM RYERSON...even though your application may not demand it in every case, you get the ultimate in specification controls when you order stainless from Ryerson—an important increased value without increased cost. Examples: in addition to chemistry specs for Types 304 and 316, you get the added value of controlled mechanical properties and Brinell hardness—and corrosion resistance assured by actual test.

STAINLESS HEADS—NATION'S LARGEST STOCK BY FAR...Ryerson stocks now include every requirement for ASME flanged and dished heads in Types 304, 304L, 316 and 316L in a wide range of gauges and sizes.



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NATION'S MOST COMPLETE SERVICE ON STEEL... ALUMINUM... PLASTICS... METALWORKING MACHINERY
SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

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Purchasing at



By Paul V. Farrell

NOBODY KNOWS WHAT Kaiser Aluminum & Chemical Corporation's purchasing department will be like a few years from now.

Not that there's any lack of long-range planning at Kaiser. It's simply that management's horizons are so broad that neat little predictions about the future are pointless. A lot can happen at Kaiser in a relatively short time, to put it mildly. It's only a dozen years since Henry J. Kaiser did the "impossible" again and started an aluminum company. Only one of Kaiser's famous ventures, it has grown fantastically (over \$400 million annual sales) and is now the top money-maker in his empire.

Kaiser Aluminum's purchasing management has developed in the traditional Kaiser manner. It's ambitious and aggressive. It has adapted itself smoothly to change. It puts a premium on ability to think and act quickly. It lays down precise responsibilities, but permits freedom of approach in carrying them out. It has grown, and learned, and contributed much to the company's fabulous success. Kaiser purchasing in 1959 is a world apart from Kaiser purchasing of 1954. If 1960 brings new demands for change, it's ready to meet them.

The Purchasing Organization

There's an interesting blend of management theory in the Kaiser purchasing organization that has evolved in the past couple of years. It mixes centralized func-

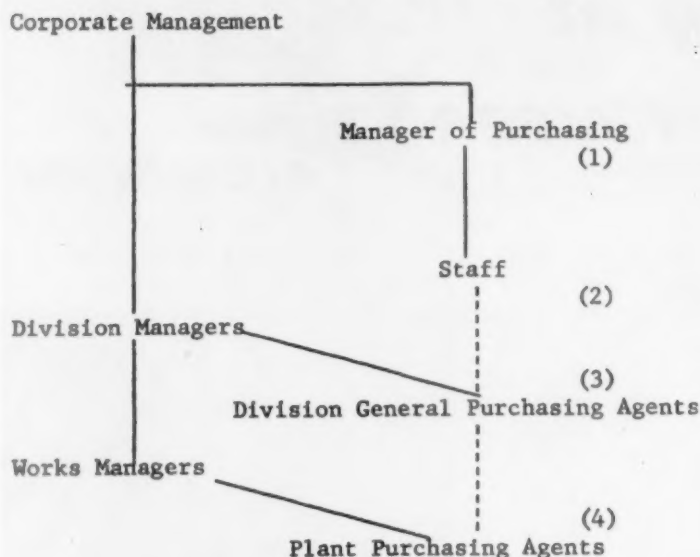


Kaiser Aluminum career man Duncan Gregg came in cold as manager of purchasing from engineering and production posts. He has built a whole new structure and reputation for purchasing in just a few years.



Assistant to the manager of purchasing Charles Jack has a Master's degree in Business Administration from Harvard Business School. He has had wide industrial buying experience.

Kaiser Aluminum's Purchasing Organization



- (1) There is a direct line relationship between the manager of purchasing and the staff.
- (2) The manager of purchasing has a dotted or functional line relationship to division general purchasing agents.
- (3) Division general purchasing agents report directly to division managers.
- (4) Plant purchasing agents report on a dotted line or functionally to division general purchasing agents and report directly on a solid line to works managers.

tional control with decentralized plant buying.

Starting at the operational level, this is how the system works: Plant purchasing agents at the 20 buying locations report directly to their works managers. They are functionally responsible to the general purchasing agents of the division their plants are part of. (Kaiser has five divisions—metals, industrial, electrical conductor, products, chemical.) Each general purchasing agent is directly responsible to the general manager of his division, and functionally responsible to the manager of purchasing of the corporation.

Manager of Purchasing Duncan Gregg reports to the administra-

tion manager, who in turn reports to the vice president and general manager. Gregg is functionally responsible for all purchasing activities in the company. That includes policies, practices, development of personnel, national contracts, trade relations, etc.

Gregg is located at corporation headquarters in Oakland, Calif. Also at Oakland are General Purchasing Managers R. G. Stanwood, Metals Division; K. E. Weaver, Industrial Division; C. D. MacMillan, Products Division; and W. M. Imbrie, Chemical Division. General Purchasing Agent R. S. Aubry, Electrical Conductor Division, is located at Kaiser's Newark, Ohio plant, along with the general manager of the divi-

sion. The general purchasing department includes a staff warehouse supervisor, a general purchasing agent for construction, an Oakland office P.A., and a purchasing staff for special projects, and an assistant to the manager of purchasing.

No Line-Staff Coolness

Putting the general purchasing agents under the division managers—they're actually part of the division budget—is a recent change and a good one for all concerned. Before, line management had looked on the G.P.A.'s as just so many more staff people. Inevitably, there was a certain amount of coolness, or at least indifference, toward the "ivory tower boys from the home office."

Now things are different. The general purchasing agent is a member of the division manager's staff. As such he shares responsibility for the profit or loss of the division. As one G.P.A. puts it: "My division manager is now asking me to do things I'd never done for him under the old set-up. This change brings us a lot closer



Contracts for several major commodities are made at Oakland. Here

and broadens the scope of my job. And the new arrangement improves my relationships at the plant—with purchasing people and shop people. You have a lot more influence with everyone when you're looked on as a member of the division team. It helps people to understand and respect purchasing more—and to get more from it."

Only one general purchasing agent reports to Gregg and has no division responsibility. That's C. F. Spencer, in charge of construction buying. Construction-purchasing is a relatively new function in the department. Up to two years ago all engineering and construction had been handled by Kaiser engineers. When the new post of Manager of Engineering was created, a construction buying unit was established in purchasing.

Spencer works directly with the Manager of Engineering on major projects, handling all bids, legal questions, changes, adjustments, etc. Buying for a big project like the recently opened \$200 million Ravenswood, W. Va. mill is his

responsibility. Smaller plant expansion projects are generally handled at the plant level. If, however, the plant P.A. wants help or advice on any problem he can always call Oakland.

Special Staff Projects

The purchasing analyst, L. W. Heinle, reports directly to Gregg. Broadly speaking, he is primarily concerned with research and communication. Under that catch-all job description come such projects as major commodity studies, market reports, development of inventory management programs.

L. W. Heinle also handles the corporation purchasing newsletter, cost reduction ideas and programs, and purchase order reviews. In addition, he's always on tap for any special assignments from the manager of purchasing. Several of the purchasing analyst's activities will be discussed in greater detail in other sections of this article.

Aggressive, thoughtful Duncan Gregg has no binding attachments to particular purchasing theories or practices. In fact, he was

brought into Kaiser Aluminum purchasing only four years ago with no previous buying experience. His two previous jobs before coming to Oakland were works manager at Kaiser-Frazer's Willow Run plant, and general manager of the Richmond Machining Division. His present organization in some respects had to be built from scratch.

Gregg's relative newness in purchasing has, however, been more of an advantage than disadvantage. He was able to take a new look, to experiment, to recruit the kind of people he thought purchasing needed. Meanwhile he knew he had solid management backing for purchasing and the solid purchasing know-how of a number of purchasing veterans brought into his department from other Kaiser companies. The methods, policies and accomplishments of his organization described in the following pages prove one point: a lot of purchasing progress can be made in a few short years with people who know what their job is and how to do it.



General P.A. William Imbrie, Chemical Division, interviews a vendor.



General Purchasing Agent C. D. MacMillan: "In six months the wall between you and the plant P.A. might get so high you can't knock it down."

Plant P.A.'s Have Freedom of Action

KAISER ALUMINUM'S PLANTS are scattered literally from coast to coast and from border to border. Some employ thousands of people, some only a couple of hundred. In a situation like this, according to Duncan Gregg, you can't lay down a rigid set of purchasing rules and expect to get the greatest return from your people.

"We start with our over-all objectives and work from there

into the most realistic, flexible approach we know for each level of the organization," he says. "The primary objective is, of course to increase Kaiser's profits. The basic related operating objectives: to get the most for every dollar we spend; to make sure we have the supplies needed for economic production. We clearly spell out policies. But the plant people have responsibility, so they've got to have a good deal of freedom."

How much freedom does a plant P.A. have under the modern management theory of decentralized buying with centralized control? Here are some examples of the Kaiser approach in certain key areas:

● **Buying.** Plant P.A.'s have full responsibility for buying all materials, supplies, construction, etc. required for the plant. (A \$100,000 limit is placed on purchase orders and construction contracts.) The only exceptions are certain "control commodities" in general use throughout the corporation. These are bought on contract at Oakland by general purchasing agents. Examples: Boric acid, fuel oil, lamps, soda ash.

Plant P.A.'s may order against these contracts, if they wish. But they're not forced to. And if they can do better locally they're encouraged to go ahead. On a few items bought for reduction operations (e.g. coal) plants may make contracts subject to Oakland's approval. The plant controls shipping schedules by release of purchase orders against the contract. Oakland has to OK major changes in contract allocations to suppliers, however.

● **Objectives.** The term "objectives" looms big in Gregg's thinking. One of the first things he did when he took over the job was to prepare a list of long-term objectives. It had two purposes: one, to give him and his group a sense of direction; two, to make it clear to all—management, operating people, etc.—that Kaiser Aluminum really had a strong purchasing department that intended to go places and do things. Since then headquarters has issued an annual set of objectives and requires one from each plant P.A. At the end of the year accomplishments are tallied against the objectives.

"Despite the fact that we require it," says Gregg, "the list of objectives is the P.A.'s own. We don't dictate to him. We feel that if he sits down, thinks out his own job and sets his own goals and commits them to paper his problems will be fewer and his results greater. As he goes he can measure his own progress. He's in



Al Giroir, left, purchasing agent at Ravenswood checks an oil delivery with Ralph Dettre, storeroom supervisor.

A corporate manual was made know exactly how he's doing."

● **Procedures.** Kaiser Aluminum has never developed a uniform code of procedure. It just doesn't fit the company's philosophy to regiment people or methods unnecessarily. The different plants have different requirements, so they're permitted a good deal of flexibility in the use of forms, etc. One plant, for example, might feel it needs six copies of a purchase order, another four. That kind of variation is permitted as long as no basic company policies are violated.

Oakland does, however, issue some recommendations on the use of forms. They feel it is desirable to try for uniformity in those forms that go outside the company for the sake of consistency.

Instructions to plant P.A.'s on recommended procedures are given in the corporate purchasing manual. The opening paragraph to this section reads.

"These forms may be purchased from local sources. Type face, measurements, etc. should be as close to the sample forms as possible. They may be of any type—e.g., snapout, multilith, etc. There may be as many copies of each as desired, and the internal copies may be used to suit local procedures." Certain mandatory requirements and suggested procedures follow.

Plant practices in other areas, such as cost reduction and inventory control are treated elsewhere in this article.

The cornerstone of all purchasing's relationships, according to Gregg, is good communication. Without that, he holds, all the theories on decentralization and flexibility of control would collapse. So he continually pushes the concept of good communications: between headquarters and plant purchasing; between plant purchasing and plant operations; between all purchasing personnel and people outside the company. Some of the Kaiser techniques for better communication are discussed below.

MANUALS HELP SELL PURCHASING

Purchasing manuals can be pretty deadly things. The fatter

they are the more impressive they look—and the quicker they're put on a bookshelf and left there. It's easier to call the home office than to wade through a hundred floppy pages to see who's wrong on a point of procedure.

Gregg may have run across one of these ponderous tomes somewhere before he came into purchasing. At any rate he has a sensible, middle-of-the-road attitude toward them. Properly used, he feels, manuals are an excellent means of communication. They help people interested or working in purchasing to know the duties and responsibilities attached to the job. They help the people who work with the P.A. understand the purchasing function. They are an effective method of keeping plant P.A.'s informed on corporate policy. But they should be easily handled and easily understood.

A corporate manual was made up a couple of years ago and distributed to all plant P.A.'s, to all works managers, and certain heads of departments in constant contact with purchasing. It's small, concise and quite general. It is concerned chiefly with policy, and treats procedures only in broad fashion.

At the plant level, however, it's up to the P.A. whether or not he wants a manual. The manual developed at the Ravenswood plant, for example, has been described as "so complete that anyone could walk in off the street, read it, and know what to do." Some of the other plants have shorter, simpler manuals; others have none at all.

Suit Action to the Need

Here again, the Kaiser theory is to suit the action to the need. Ravenswood is a brand new plant. As Kaiser's big bid to establish

RAVENSWOOD PURCHASING DEPARTMENT	
1958 OBJECTIVES & ACCOMPLISHMENTS	
In addition to following General Purchasing's two basic objectives of	
1. Receipt of maximum value for each dollar of expenditure.	
2. Assurance of supply necessary to sustain economic production.	
We have the following objectives at Ravenswood	
1.	Maintain and strengthen close working relationships between our department, General Purchasing and the various Ravenswood plant departments.
✓	<ul style="list-style-type: none">a) Monthly meeting with Works Engineering.b) Attend Sheet & Roll and Reduction monthly cost meeting.c) Communications with Oakland Purchasing through means of Weekly Purchasing Staff Meeting from which minutes are kept and forwarded to Oakland.
2.	Pursue development of a yardstick for evaluating Purchasing performance.
✓	<ul style="list-style-type: none">a) Through weekly staff meeting the following points are periodically reviewed:<ul style="list-style-type: none">1. Are we getting fair prices.2. Are we shopping for new sources.3. Do we analyze "emergency" purchases with using departments.4. Work toward an inspection of received material procedure.5. Do we have clear-cut delegation of authority and responsibility.6. Do we combine requisitions to effect less paper work and phone expenses.7. Do we read trade journals and other relevant literature to keep abreast of new developments.8. Participation in local purchasing association.9. Endeavor to keep stock-out between 2% and not more than 4%.

Each Kaiser Aluminum plant establishes objectives for the coming year, measures results at the end of the year. Summary serves a double purpose: a report to general purchasing and a report to plant management. Accomplishments (check marks) were originally printed in red beneath each objective in this report.

itself as a supplier in eastern U.S., the plant had to be ready to function efficiently from the day it opened.

As part of a program to indoctrinate people thoroughly in their duties in the new plant, all department heads were instructed to describe the operations of their departments, for incorporation in a plant practices manual. (This was supplemented by a series of conferences at which department heads explained the functions of their groups.)

Al Giroir, plant P.A. at Ravenswood, reasoned that he could build a good purchasing manual on the material prepared for the plant practices manual. The result was a manual that has been of big help in training his department, which is the largest in the corporation.

GOOD COMMUNICATION MEANS BETTER PURCHASING

A number of other methods of communication have been found very effective in building the strong Kaiser purchasing organization. Chief among these are:

● **Personal Contacts**—There's a rule of thumb at Oakland that the general purchasing agents

visit each plant in their divisions at least once every two or three months. As C. D. MacMillan, one of the purchasing veterans (20 years experience) of the organization, puts it:

"If you get out less than that, the wall between you and the plants might get so high you can't knock it down. Things can get sour in six months. Telephone calls are all right in some cases. But they'll never take the place of sitting down with a P.A. and listening to his problems—or letting him sound off on what he thinks is a damn fool notion of yours.

When we both can talk man-to-man like that we don't try to con anybody. Understand them and they'll understand you."

G.P.A. Ken Weaver, sees the personal visit as a chance to pass on some of the practical experience he's picked up in 20 years in purchasing. "When you're on the P.A.'s home ground," he says, "it's a lot easier to pass on some of the techniques and methods that have worked for you. You can look at his paperwork and give him suggestions. You can tell him how to develop better relations with vendors. "I always try to get across how important it is to establish good casual contacts

with plant people. Once the P.A. has done that he finds it a lot easier to question requisitions, to ask plant people for help and advice, to call them up and discuss things."

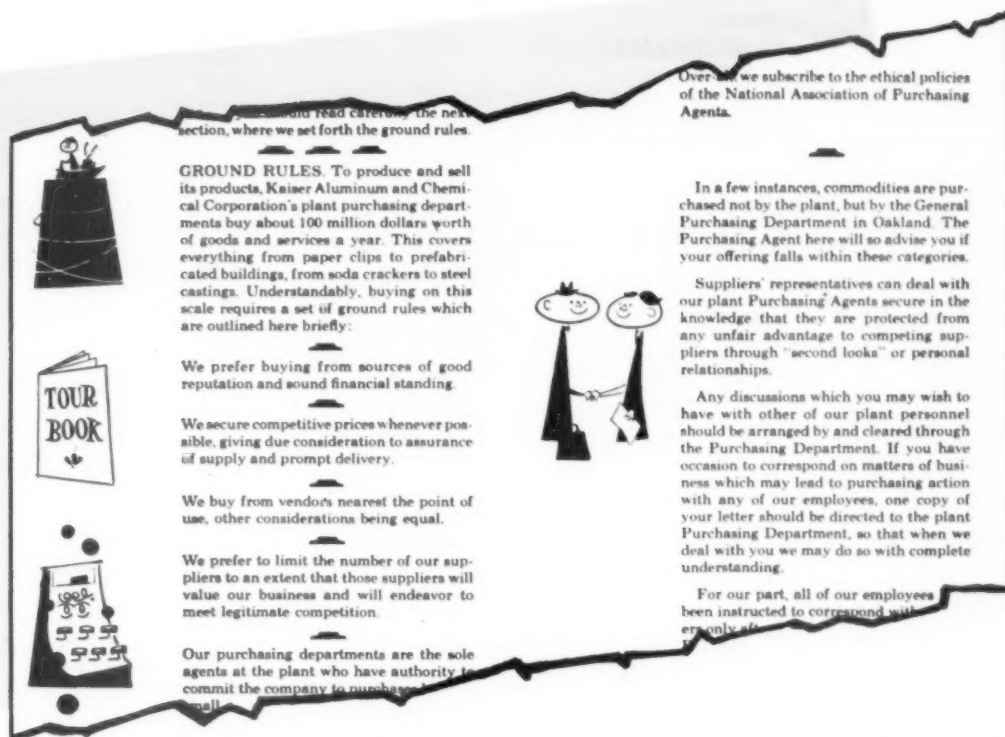
Meetings Important

While building his organization Gregg spent a good deal of his time visiting Kaiser plants. Necessarily, he now limits these individual visits and relies on the G.P.A.'s to maintain the personal contact between plant P.A.'s and Oakland headquarters. He does, however, meet directly with plant purchasing people at a series of national and regional purchasing meetings. Meeting dates are determined more by purchasing department requirements than by a rigid schedule.

An agenda for a typical regional meeting is fairly informal—deliberately so. The idea is not to confine discussion but to provide a springboard for examination of a whole range of ideas. "We can get into darn near anything in one of these meetings," says Gregg. "We want everyone to know what the other fellow is thinking about and doing. Aim of the meetings is to get everyone going in the same direction on

Backdoor selling is rigidly controlled at Kaiser Aluminum. All contacts with suppliers are made by purchasing. When sales representatives request interviews with plant personnel approval is given in purchasing after division or department heads approve the visit. Salesmen interviewing in any area other than the administration building must carry this authorization from purchasing.

AUTHORIZATION FOR INTERVIEW					
TO: PLANT PROTECTION DEPT.—MAIN GATE					DATE
PLEASE ISSUE A TEMPORARY BADGE TO THE COMPANY REPRESENTATIVE(S) LISTED BELOW WHO ARE GIVEN PERMISSION TO SEE THE PERSON(S) NAMED AND					MO DAY YR
AND <input type="checkbox"/> BRING IN OR OUT PERSONAL MATERIALS AND EQUIPMENT					3 6 58
COMPANY REPRESENTATIVE			WISHES TO SEE		
NAME	COMPANY	NAME	DEPT		
1. C. Shaker	L. J. J. J. J.	1. L. Rogers	Relating		
2.		2.			
3.		3.			
NATURE OF INTERVIEW					
Metal Marking Pencils					
PURCHASING DEPT. APPROVAL	ESCORT REQUIRED	NAME OF ESCORT	INTERVIEWED BY (signature)	TIME	
A. P. Davis	<input checked="" type="checkbox"/> YES	J. Miller	1. L. Rogers	10:50 AM	
RECEPTIONIST'S INITIALS	<input type="checkbox"/> NO		2.		
PC-28 (2-25-58)			3.		
THIS FORM IS TO ACCOMPANY VISITOR—TO BE SIGNED BY EACH INTERVIEWER AND TURNED IN BY VISITOR AT MAIN GATE ON COMPLETION OF VISIT.					
Inserted by receptionist at time authorization issued.					



Kaiser Aluminum's purchasing welcome booklets are standardized throughout the corporation, except for inserts on visiting hours. General policy is not to limit hours, but plant P.A.'s are permitted to do so if they feel it's necessary.

general purchasing principles. Then they can work out their own solutions to common problems."

No matter what else is discussed at these meetings, one point is always stressed: that Kaiser purchasing people have more contact with outsiders than anyone in the company. Therefore they have a special responsibility in the field of public relations. This is another important phase of Gregg's communications program.

Vendor Relations

Kaiser's theory on vendor relations is simple: treat suppliers right (1) because they'll then treat you right and (2) because you never know when they'll be customers for Kaiser products. The company's "ground rules" for buying are outlined in general in the corporate welcome booklet, and spelled out in detail by plant P.A.'s in their regular contacts

with suppliers. (See illustration).

Gregg pushes hard on a program of visits to suppliers—by himself, the general purchasing agents, and the plant purchasing agents. Plant P.A.'s are expected to prepare brief reports after each trip stating results of the visit. They are also encouraged to take interested plant personnel along on vendor plant visits.

● **Purchasing Newsletter**—For about three years, Kaiser purchasing has circulated a newsletter that is part newspaper, part correspondence course, and part report to management. The newsletter is made up in Oakland by the purchasing staff and distributed to all plant purchasing departments, and to each works manager.

The monthly letter runs anywhere from 4 to 8 pages. A whole issue may be devoted to one subject, or to three. Its subject matter: anything that will help fill

the informational and educational needs of purchasing people. Here's a typical list of subjects covered in a six-month period:

Statistical Inventory Control (a full-scale discussion of the technique); Purchasing Is a Profit-Making Job; Personnel Notes; Cost Reduction (techniques and results at various plants); Price Trends and Their Impact on Plant Costs; Another Look at Price Movement; Minutes of Regional P.A.'s Meeting; Business Outlook (a special 14-page first-of-the-year report on business prospects, including numerous charts and statistical material on various phases of the economy.)

Plant P.A.'s like the newsletter. It provides them with news of what other plants are doing and stimulates a healthy competitive spirit in the purchasing organizations. It also is another way to close the communications gap between the plants and Oakland.



Cost Reduction: Who Sets the Target?

KAISER ALUMINUM'S PURCHASING organization saved well over \$2 million in 1958, the fourth year of its organized cost reduction program. Savings just topped \$1 million in '55 and have been going up steadily.

Although the early results were impressive enough, they got better as Kaiser experimented with the original program. A key move was to give plant purchasing agents greater voice in changing and improving the "ground rules." This has resulted in greater acceptance and cooperation on their part. Instead of looking on the program as one arbitrarily imposed by general purchasing, they look on it as their own. "This," in the words of one of the Oakland staff, "has assured the program's success and led to an increase in savings."

The two basic principles of the original program have not changed. (1) A saving may be

reported only once. Credit is allowed for a maximum of 12 months even though benefits extend over a period of years. (2) Purchasing must take a leading part in accomplishing any reported saving. And it must acknowledge any help it got from other departments.

Plant P.A.'s went to work on some of the other rules, however, and convinced general purchasing they should be changed. The changes offer some hints on how to make a multi-plant cost reduction program work better:

- Forms for reporting were reduced in number and simplified. (See illustration)

- Plant purchasing agents now make up their own annual targets, subject to review at Oakland. These are to reach Oakland no later than December 15, and include an explanation of how the target was determined. General purchasing suggests an

average target of 2% of the previous year's total purchases, but doesn't demand it. The idea is to set a target high enough to present a real challenge to each member of the purchasing department.

- Reports need not be verified by anyone outside the purchasing department. Previously this had been done by someone designated by the plant manager. Plant P.A.'s thought this was unnecessary, time-wasting, and a nuisance to the verifier. A couple thought it reflected unfavorably on their ability to prepare a sound report.

How the System Works

Annual targets and explanations of how they were determined are supposed to reach Oakland not later than December 15. General purchasing still holds to the suggestion that targets be set at an average of 2% of last year's purchases—but it's still only a suggestion. Their real aim is to have them reflect a genuine challenge to each member of a purchasing department. "We don't demand that targets be met," says one staff member. "But we do demand that a conscientious effort be shown."

General purchasing is rough on "eligibility" of cost-saving items reported. Any project that purchasing didn't initiate or play a major role in is thrown out. So are those that don't involve any effort or change in practice by

PURCHASING DEPARTMENT COST REDUCTION REPORT - DAILY WORK SHEET					
Buyer _____		Works _____		Month of _____ 195__	
Date	P.O. Number	Savings This Order	Est. Ann. Savings	Description and Explanation of How Savings Effected	Cooperating Dept. or Individuals

Sample of a buyer's daily cost reduction worksheet. Information on the worksheet is recapped and sent to Oakland monthly. Recap sheet includes total savings to date and comparison with monthly and annual targets.

the purchasing department—fluctuations in market prices, for example. In most cases they get no howls from the plants on these. The stricter Oakland is, the more respect it seems to earn for the program and the way it's being run.

Any light shed on cost reduction isn't hidden under a bushel by purchasing. Departments or individuals cooperating in any project must be mentioned on the buyer's daily cost reduction sheet and on the P.A.'s recap. And Oakland encourages the plant P.A.'s to reproduce these forms and circulate copies to other department heads and supervisors at their plants. This credit-sharing approach has won purchasing a lot of cooperation and assistance in cost reduction from operating people.

More publicity for the program is obtained when general purchasing issues a consolidated savings report with the monthly newsletter. Results are shown only by division. This prevents unfair comparisons between plants, objections to other plant targets and other forms of sniping. Individual plant results are circulated only to top management in Oakland.

Ideas that might be applied at more than one plant are also featured in the newsletter, or circulated by general purchasing agents to the plants concerned. These could include "not measurable" items—those for which an accurate dollar saving can't be estimated but which could increase sales, improve procedures, speed up handling, etc. Plant P.A.'s are required to report these to Oakland.

Compare Plant P.O.'s

Oakland headquarters plays an active part in the program—both by coordinating ideas developed in the plants and by generating new projects. The purchasing staff reaps a substantial cost reduction harvest just from reviewing and comparing all plant purchase orders. This is one of the first basic steps in a long range program of cost reduction through standardization. The program involves two approaches: the use of commercially available prod-

How to Save Money

Successful cost reduction techniques used at Kaiser Aluminum plants are publicized in the monthly Purchasing Newsletter issued at Oakland. Here are a few examples selected from recent issues:

Substitution. Mead will save about \$175,000 this year by substituting spent chrome catalyst for prime chrome oxide. They also saved \$1,440 by substituting russboard for hardboard as pot lining material. Further savings resulted from using aluminum nuts and bolts where brass was formerly requisitioned. Dolton substituted asbestos covered aluminum spacers for Basswood spacers—saves \$1,800.

Change in Specifications. Chalmette requested thorough testing of silicon grades resulting in approval to purchase silicon with higher iron content at a saving of \$13,500. They also changed specifications on flow control tips from refrax material to cast iron and save \$5,400. Trentwood buys 99.5% guaranteed zinc instead of special high-grade, and saves \$5,200 annually.

Freight. Purchasing and traffic work together to obtain lower freight rates. An example is reduction of cryolite rail rate from seaport to Mead, saving \$8,010. Mead also prevailed on agent to hold cryolite at dockside until lower rate went into effect. Trentwood had aluminum scrap tubs shipped from Cleveland manufacturer to Ravenswood for loading with scrap prior to shipment to Spokane—freight savings \$2,110 over normal procedure.

Packaging. Trentwood saved \$40,200 by replacing fibre bags with polyethylene for coil stock shipments. Non-measurable savings also resulted from easier handling, less storage area, and improved customer relations. Another saving of \$19,200 resulted from reducing the poly. gauge from .006 to .005. At Halethorpe savings of \$10,050 resulted from switch to fanfold wrap from plain corrugated with separate end pieces. Dolton had a large savings from the same switch.

Elimination. Trentwood purchasing requested evaluation of usage of hi-heat resistant paint for protection of fluxing tubes. Study showed no increased life for tube. Use of paint was eliminated for cost reduction of \$3,720.

Quantity Purchase. Permanente Foil buys cartons and shipping cases in larger quantity at cheaper price, saves \$2,250. Newark made cost reduction by placing order for annual requirements of respirators to be shipped and billed as needed. Other examples include accumulation of steel requirements for mill orders, and purchase of 100-pound (4,318 feet) rolls of strapping in lieu of 300-foot rolls.

Make or Buy. Chalmette saves a net of \$850 by having "J" bolts and bolts for Nordbergs fabricated in our shop rather than purchasing outside. At Mead, a reverse situation involved finding an outside supplier of flue bottom studs and pot skimmer scoops and back plates at a savings of \$1,420 over shop fabrication.

Repair and Salvage. Goggles at Mead were previously discarded when damaged. By setting up storeroom repair center, a net of \$8,280 was saved after deduction of parts and labor costs. In addition, they save \$1,040 by repair of respirators and by having facelets and filters dry cleaned and used again. Chalmette saved over \$21,000 by salvaging reinforcing steel from discarded concrete trench covers.

Standardization. Chalmette urged use of standard turnbuckles in lieu of special forged product—saved \$200. They also save \$10,540 annually by standardizing on one grade of #2 grease for multi-purpose use in place of various grades—lengthened relubrication periods, saved labor and quantity used. By switching from special plastic to standard NEMA grade CE plastic of equal quality, about \$200 was saved.

ucts in place of specials, and development of Kaiser specifications to eliminate brand-name buying. To date, the drive to substitute standards has paid off with "ter-

rific results."

A number of outstanding examples of Kaiser cost reductions in key areas appear elsewhere in this article.



Purchasing's Part In Inventory Management

WITH ABOUT \$6 MILLION invested in thousands of warehouse items (e.g., Trentwood has 12,000 items, Newark close to 11,000) Kaiser is understandably "inventory-minded." Under the guidance of the general purchasing staff, plant P.A.'s have been for the past year and a half working out a seven-point program for better control and measurement of inventory reduction.

In bare outline, the program involves these steps:

- Establishing year-end inventory reduction targets on general stores, processing supplies and purchased raw materials. A simple monthly report measuring progress toward the goal is recommended.

- Setting up a monthly out-of-stock report to measure the quantity and quality of stores

service. The report can also be used as a control device as stores inventories are reduced.

- Analysis of monthly report on purchases of direct charge materials prepared by plant accounting. This report calls attention to any unwarranted increase in purchases of this type. It also indicates what additional materials might be brought under the control of purchasing's regular warehousing and traveling requisition procedures.

- Establishing a general stores catalog, with provision for systematic revision. This promotes standardization and substitution, aids requisitioning and orderly review of maximum and minimum quantities, and provides standard reference data on items.

- Use of Economic Order Quantity formulas to take the guesswork out of quantity determination. (Oakland has pushed use of EOQ, in meetings and through the monthly newsletter, as a tool for cutting inventories, reducing stock-outs, reducing the number of purchase orders issued, and concentrating attention on purchase of high-value items.

GENERAL STORES
DAILY STOCK-OUT AND REORDER SHEET

DATE: August 25, 1954

DESCRIPTION	QUANTITY	OUT OF STOCK	RE-ORDER TO PREVENT SHORTAGE
1/2" x 2-1/4" Hex Head Cap Screws	19-2-1-40	X	Just ordered
1/2" x 5-1/2" Hex Head Cap Screws	19-2-1-52	X	Just ordered
1/2" x 2" Hex Head Cap Screws	19-2-1-39	X	Just ordered
5/8" Anchor Shackles	19-8-5-2	X	Just ordered
3/4" x 3" Machine Bo			
3/4" x 5-1/2" Machin			
Clean Rags			
5/8" C-5300 Bearing			
6" Round Wire Brush			
6" Sludge Heads			
Clean Rags			
Sanjo Spouts			
1/2" Asbestos			
Clean Rags			
1/2" Paint Brush			
3/4" x 3" Hex			

VENDOR	TERMS	POB CODE	DESCRIPTION	STOCK OR ACCOUNT NO.
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DATE: 8/26/54

P.O. NUMBER: 1-SP 2-SPFA 3-SPCLFA 4-SPRFA 5-LBB 6-DEST 7-SP CWT ALLD

7. SPECIAL INSTRUCTIONS:

DATE	P.O. NUMBER	SHIP DATE	VIA	VENDOR	QUANTITY	UNIT	UNIT PRICE	UNIT EXTENSION	TOTAL	COMP. APPR.	BUYER
8/26/54	1-SP										
8/26/54	1-SP										

Daily stock-out sheet (top) is prepared in stores, checked by the plant P.A. then checked against Kardex record. The sheet then goes to the buyer along with traveling requisition for each item (below). Other side of the requisition includes data on maximum and minimum quantities, monthly usage, and amounts ordered, received and on hand.

- Regular review of usage records to identify surplus material. Oakland recommends reviews at least every three months to avoid surplus build-up and loss of resale value. A few of Kaiser's plants go further and have a monthly review of inactive items.

- Establishing a definite and orderly surplus disposal procedure.

A practical example of some of the plant techniques for tight control of inventory is the system used by "Monty" Montague, P.A. at Newark. Its effectiveness can be measured by the figures: in January '57, value of stores at Newark was \$390,000; by December of the same year, it had been brought down to \$236,000; in September '58, it was \$182,982.

Here's how the inventory control program works:

When a requisition is brought to the storeroom, the storekeeper issues the required amount. If that empties the stock of that item, he indicates this fact on his daily out-of-stock sheet.

At the end of each day, the storekeeper sends his out-of-stock sheet (see illustration) to Montague, who reviews it and sends it to Kardex clerks. Meanwhile, requisitions from previous days have been forwarded to the Kardex section for posting. A clerk checks out-of-stock items against the record on the card to see if there are any discrepancies. She also indicates on the out-of-stock sheet what items have been ordered and when.

The out-of-stock sheet is then turned over to the buyers, who note their own items and take necessary follow-up action, depending on the urgency of the



Pig storage at Kaiser Aluminum's Chalmette reduction plant.

item. The sheet is then returned to Montague, to be used in further inventory analysis and preparation of the monthly report.

Percentages of out of stock items can be deceiving. Montague has had them run as high as 10%—but when the list was interpreted a good part of the 10% proved to be made up of small items like nuts and bolts that could be bought locally. Eliminating those, the out-of-stock figure runs on an average of slightly over 2%.

Montague sets a minimum stock level—"at the lowest point possible"—on all stores items. However, he leaves determination of maximum levels up to the buyers. General policy of the department is to keep 30 days' stock on hand, not counting spare parts. When spare parts are included, stock runs to about 9 months' supply. (It's difficult, of course, to keep spare parts inventory low in an operation like Kaiser's. Gears worth thousands of dollars, for example, have to be kept in stock even though they may be needed only once every five or ten years.)

Buyers are notified by Kardex clerks when an item has dropped to its minimum. The buyer gets the stock card and traveling requisition, from which he gets all the information he needs. His decision to buy is based as much on the usage record as it is on the fact that the minimum has been reached. If it isn't an active item there may be no need to order despite the fact that the minimum has been reached.

Coding Materials and Supplies

An important part of any stores catalog is a comprehensive but clear coding system. Kaiser Aluminum's Newark plant identifies its materials and supplies in this way:

A code number (called KACC control number) is assigned to each item according to several breakdowns. There are three basic groups of materials and supplies: Stores Items, Special Order Items, Capital Spare Parts. The accounting code number 250 is used for all three items.

Within the 250 code the three groups are identified this way:

Special order items are assigned code number 90. To facilitate tabulating use of the code, it is referred to as Code 9. Capital spare parts have code number 89. Stores items are assigned numbers 01 to 99 (except of course for 89 and 90).

General stores items are divided into commodity groups, e.g. 250-02 for returnable containers 250-04 for electrical supplies, 250-05 for lubricating oils and greases, etc. The next identification number used designates the class of commodity. Within the electrical supplies group, for instance, 250-04-1 designates condulets, 250-04-2 designates connectors, etc.

Within each class, specific items are assigned four-digit numbers. Numbers are assigned in sequence, using a control file of numbers kept by the storeroom branch supervisor. As new items are ordered, they are given a number to show commodity, class and individual item. A complete number reads this way: 250-01-2-0059. If an item is discontinued, its 4-digit number is not reassigned.

Special order items are further identified by using the number of the purchase order against which the item was bought. Since several items may appear on an order, the item number from that order is also used to designate the specific item being coded. For example 250-9-12345-12 indicates a special order item (Code 9) bought on purchase order 12345. It was the 12th item. No special order number is ever repeated. The number is assigned by the receiving storekeeper.

Capital spare parts, general code 89, are assigned class and item numbers in the same way as stores items.

The numbers are of great importance to the storeroom branch because they are used in filing locator records, reordering stock, and requesting and withdrawing items. Requisitioning departments take the numbers from the stores catalog for ordering, thus depend on their accuracy. Accounting uses the numbers in a number of ways. For all these reasons, according to the Ravenswood manual, it is essential that all purchasing personnel be familiar with the coding system.



Company Careers Start in

WHEN A PROMISING YOUNG man is being recruited into Kaiser purchasing, one of the selling points is that he'll have a chance to get out of it.

There's no irony in this statement. Purchasing at Kaiser is a management function. As such it offers newcomers a training ground for good careers—in the department or in the company. When a potential purchasing trainee is interviewed he's told frankly: "There are plenty of avenues to progress in purchasing. You can work your way up from buyer, to assistant P.A., right on up to an executive buying spot at the home office. In doing so, you are in constant contact with line management. If

they're impressed with what they see and want you for another position, we won't stand in your way."

This approach makes it doubly tough to pick people for purchasing. They have to fit in with a buying team that has in a few years set a terrific standard of performance. And many of them have to have the potential to progress to the top executive levels of the corporation. This calls for some exceptionally fine men, says Assistant Manager of Purchasing Charley Jack, "considering the substantial reserve of top quality personnel now within the corporation."

At the same time Kaiser knows that a purchasing department

loaded with budding executives is an unbalanced one. In its recruiting and training it provides for a steady supply of basic purchasing people who can do a job and take pride in their work no matter at what level it may be. "Everybody can't reach the top," says Jack. "But you can surround yourself with people who will continually strive to bring their work to its highest state of efficiency and productivity."

What Kind of Purchasing People?

A young department in a young company, Kaiser purchasing has had several advantages in its program of getting the right personnel:

It has management's blessing to seek well-educated people and offer them excellent pay and training. College graduates accepted into the purchasing trainee program are paid well, advance fast. College graduates with A.B. or B.S. degrees start well above the average reported in PURCHASING Magazine's survey in the Jan. 6, 1958 issue. Within 9 months their salaries are upped close to 20%. Trainees with advanced specialized degrees do better—both on starting salaries and rate of increase.

It can set its own educational or experience standards. Gregg and his headquarters group have no hidebound conventions to restrict them in choosing people. Gregg, for example, is an engineer. Almost all in the Oakland organization are college graduates. Four hold Masters Degrees in Business Administration—three from Harvard, one from the Wharton School. They'll consider a broad range of education in select-

PERSONAL QUALIFICATIONS

EDUCATION AND TRAINING

Feel that all buyers within the Corporation should be exempt supervisors. To otherwise assign a person the responsibilities of a buyer is penny wise and dollar stupid. A company should select those persons with care to whom it is intending to furnish a blank check so to speak and they should be team members.

A person should preferably have a college education for this assignment, most preferably in Business Administration or Marketing. This would assure sufficient background in accounting, finance, marketing, purchasing, economics and law. Ideally, additional courses in practical engineering would also help.

OTHER PERSONAL QUALIFICATIONS

Purchasing requires constant shoulder brushing with persons of high level and education. A mature manner in a tactful person creates goodwill and smooth relations. This in turn creates confidence in yourself, your company and your operations as a buyer. Alertness must be thoroughly ingrained. Above all, however, the quality necessary to practice successfully as a buyer is integrity. Without this one virtue, nothing else matters too much and everything done will consequently suffer.

Full-scale job descriptions are required of buyers in the Management Inventory and Development Pro-

gram. This is an actual excerpt from a Kaiser Aluminum's buyer's analysis of his own position.

Purchasing

ing trainees—majors in economics, accounting, business administration, and engineering being the most attractive candidates.

"We have no deadwood to hinder us, either in policies or people," says Gregg. "The few older, more experienced purchasing men we've brought into the department have done a magnificent job for us. But they were chosen because their whole approach to purchasing is the modern one—not just because they happened to be handy. Any young man we bring in from now on, however, will have to have a college degree. We insist on this minimum qualification for his benefit and our own."

It is free to recruit where it sees fit. Kaiser recruits a number of its purchasing personnel at various colleges and universities through the corporation recruiting program. Likely candidates are interviewed in depth at every turn—by the personnel department, at purchasing headquarters, and at the plants if Oakland is interested in them but can't use them at the moment.

Still, the company has grown so fast that a lot of hiring has to be done both on the outside and in other departments of the corporation. Even with a policy of training its own people and promoting from within, it will be hard to completely eliminate outside hiring if Kaiser's projected growth occurs. Typical acquisitions: Assistant Purchasing Manager Jack from the Container Corporation (Jack is a former president of the Chattanooga Association, N.A.P.A.); Larry Loewenstein, Dolton Works P.A., first training program graduate to become a purchasing agent, from Kaiser Engineers; General



One of the most important phases of MDP is the personal discussion between the man being evaluated and his immediate superior. Here Sam Fitch, buyer at Ravenswood reviews his appraisal with P.A. Al Giroir. Fitch was a trainee before becoming a buyer.

Purchasing Agent Bill Imbrie, from Lehigh Coal and Navigation in San Francisco; Warehouse Supervisor J. A. Sullivan, from Kaiser-Frazer in Willow Run.

In hiring people from within, or switching posts within the purchasing organization, Gregg has to depend on a good working relationship and understanding with operating personnel. Works managers will generally go along with transfers of even outstanding purchasing people (1) if they are convinced that it will help the corporation and the man; (2) if they are guaranteed a good replacement. Since purchasing has good standing with the operating departments and has never bucked them when they wanted a P.A. for another job, few crises over transfers have arisen. "One of the main things we have to remember in these cases," says Gregg, "is to never try to force anyone's hand. He has to be sold on the idea, or you're in for trouble."

Kaiser's galloping growth has temporarily stymied one of Gregg's pet personnel projects: to get more young fellows with engineering training to move out of Kaiser operations into purchasing. He figures there are technically trained, capable young fellows who for one reason or

another would prefer purchasing to production. But if there are, they're needed in engineering right now, and the plants can't afford to let purchasing have a look at them for the time being.

Purchasing Training

Kaiser's purchasing trainee program is a four-phase one. It consists of a minimum of six months' training in three different plants, then a short orientation at Oakland before a permanent assignment. As the trainee moves from plant to plant, his time is taken up primarily with learning the fundamentals of the buying job. But his technical training is not neglected, and special efforts are made to acquaint him with operating practices and personnel. Everyone starts in stores and reclamation and works up.

Curiously enough, few trainees have gone the full route. It isn't that they don't measure up. In one way they measure up too well. Kaiser's phenomenal growth opened up all kinds of new purchasing jobs and the logical place to look for men to fill them was among the trainees. This meant cutting short a man's training and taking a chance that he was ready to take on a buyer's job. The trainees met the challenge.



Samples of one of Kaiser Aluminum purchasing's basic tools of communication, the monthly Purchasing Newsletter

Examples: L. S. Lowenstein, previously mentioned, was able because of his previous experience to get through phase one at the Trentwood plant in less than six months. He took the post of Senior Buyer at the Tacoma plant for a year and a half and then became P. A. at Dolton.

Len Gallazo started his training at the Newark plant and within one year was promoted to buyer.

So far fortune (in the form of Kaiser expansion) has smiled on Gregg in his efforts to convince bright young trainees that they have big opportunities in Kaiser purchasing. In a more static company, a lot of ambitious youngsters might lose their drive, or become frustrated and quit, if new horizons weren't opened to them. But even if Kaiser's growth slows down, Gregg is still de-

termined to keep purchasing a place where management-caliber people can move ahead.

Evaluating Purchasing People

Once a man is a full-fledged member of the purchasing department, he is regularly appraised under the Kaiser Management Inventory & Development Program. The name is self-explanatory: Kaiser wants individuals to get maximum opportunity to develop, and it wants to make sure it has the right number and kind of people to run its organization. Related objectives are to improve performance, to have each important position backed up by two capable men, and to shorten the time it takes to get men ready for more responsibility.

The forms and techniques used in the system (see illustrations) are designed to pinpoint what

people need and arrange for them to get it. Each person in the program begins by filling out a complete personal history. In addition, he draws up a Management Position Description of the job he's now holding.

The next step is an appraisal of the man's performance and an evaluation of his potential by a committee. The committee is generally made up of the man's immediate superior, the superior's immediate superior, and a third individual selected by the first two as knowing the man and his work.

The committee members draw up their appraisals and evaluations independently. Then a composite is made up. The immediate superior discusses this directly with the man concerned, without showing him the actual forms. The final step is to work out an individual development plan, aimed at helping the man to better fill his own needs and the organization's needs. Both the members of the committee and the man being appraised help shape the plan, which is formalized in writing by the immediate superior. In all cases any objections or disagreements by the individual are made part of every record.

Oakland is constantly evaluating its purchasing people independently of the M.I.D. program for its own purposes. It does, however, try to mesh its own efforts with those made at the plant level. Both Gregg and the general purchasing agents discuss purchasing performance with plant managers on their visits. In addition, they are trying to have M.I.D. programs for purchasing scheduled to coincide with the G.P.A.s' visits, so that they can sit in on committee meetings.



Editor Paul Farrell shows Senator Saltonstall recommendations for streamlining federal procurement which were made in *Purchasing Magazine's* article, "The Truth About Military Buying."

Purchasing Men Strongly Support New Procurement Bill

GOVERNMENT BUYERS will be freed from some of their bureaucratic shackles if Senator Leverett Saltonstall has his way. The Senator is sponsoring a bill (S 500) which will give to federal procurement some of the flexibility now enjoyed by buyers in private industry.

Currently federal buyers are often completely hamstrung by rules made for them by Congress. They are required frequently to advertise for bids when the job could be done more economically by competitive negotiation. They make so-called "fixed price" or "incentive" type contracts. But if the contractor does a bang-up job, and keeps costs down, he'll find

"excess" profits taken away from him through renegotiation.

Needless to say, this takes the incentive out of an incentive-type contract. Both contractor and government buyer are often snowed under with a lot of unnecessary paperwork and specifications; the taxpayer indirectly picks up the tab for the waste that is generated.

Wastes Taxpayer's Money

"Our time-consuming military procurement process does more than just waste the taxpayer's money," Senator Saltonstall declared in an exclusive interview with editors of *PURCHASING Magazine*. "It also results in a loss of

valuable time in weapons development as compared with the Soviets." Our buying procedures are sometimes so involved that months of precious development time are lost while contractors are weaving their way through the red tape.

Principle features of the bill include the following:

(1) Incentive and fixed price contracts are exempt from renegotiation. If the government makes a deal, it must stick to it. This will give contractors incentive to operate more efficiently.

(2) Competitive negotiation will be permitted on a broader basis. To a greater extent than before, government will be able to buy as industry buys. No longer will it be forced to advertise for bids when this is impractical.

(3) Greater use of performance specifications and general simplification of procurement procedures.

(4) Extension of the "weapons system" concept wherein a major contractor is held responsible for the over-all development of a weapons system. Provision is made for increased small business participation.

(5) Greater use of fixed price and incentive type contracts. With the latter, the contractor would get 20% of the savings and the government 80%.

All of the above reforms have the wholehearted support of top officials in the Defense Department and of such interested groups as the National Industrial Security Association. They are also consistent with the recommendations made by the editors of *PURCHASING Magazine* in its detailed study of government procurement methods, "The Truth About Military Buying," which appeared in the October, 1957 issue.

IDP: More Paperwork— Lower Costs

When Hayes Aircraft installed an integrated data processing system in its purchasing department, it meant more paperwork. But the new system saved time, money speeded the buying operation and reduced the size of the clerical staff.

USE OF a new integrated data processing system at Hayes Aircraft Corporation, Birmingham, Ala., is one case where an increase in paperwork resulted in reduced personnel and increased efficiency and accuracy. In addition, there has been a general speed-up of the entire purchasing operation.

Among the many outstanding benefits of the new IDP system—a system that has meant savings of at least \$250,000 a year—are:

- Closer adherence to production schedules;
- Better use of working capital as a result of increased inventory turnover;
- Material gets into stores and onto the production line much more rapidly.

The new integrated data processing system solves a purchasing problem that is common to many job shop operations. The basic problem for B. A. Rupert, director of supply, was to maintain control over thousands of parts and apply the cost of the parts to the right job. At the same time, he wanted to cut the cost of his purchasing operations.

The starting point of this new system at Hayes Aircraft is a form supplied by The Standard Register Company. The form, a Request for Procurement or Production Material Requirements (see cut), is handwritten by the requisitioner. The blocks on the requisition form for information such as item number, vendor number, quantity, etc., are underlined in color so the purchase order



Purchase orders are written on forms feeding continuously through Flexowriters. This ten-part Standard Register form supplies all the copies necessary to control and follow-through on the purchase. Meanwhile a by-product tape is produced automatically.

typists can pick out the information they need without scanning the entire form.

Assuming the material will be purchased outside, a Request for Quotation is typed from the original requisition copy.

When the vendor is selected, a ten-part purchase order is written on a Flexowriter with a by-product tape produced automatically. The purchase order, supplied in continuous form, contains all the necessary copies to control the entire purchase and receiving procedure for a single item. Although Hayes previously used a multiple purchase order containing many items, the posting and manual steps to control each individual item required too much time.

Now, with just one item per purchase order, better all-around efficiency is achieved. A considerable amount of time and manpower is saved because the entire job is done mechanically.

The information on the by-product tape produced during the typing of the purchase order is converted to punched cards on IBM equipment. The punched cards are held in a tub file until receipt of the material. They are then used to up-date on-hand inventory figures and to print material identification tags and material arrival notices.

This material identification—material arrival notice form is center-perforated so that the arrival notice can be split from the

**PURCHASING
HAYES AIRCRAFT CORP.
BIRMINGHAM, ALABAMA**

**REQUEST FOR PROCUREMENT OR
PRODUCTION MATERIAL REQUIREMENTS**

FORM NO. 1-59

1. NAME OF PURCHASER: **HAYES AIRCRAFT CORP.**

2. ADDRESS: **BIRMINGHAM, ALABAMA**

3. CITY & STATE: **BIRMINGHAM, ALABAMA**

4. PHONE NO.: **2-1234**

5. FAX NO.: **2-1234**

6. NAME OF VENDOR: **HAYES AIRCRAFT CORP.**

7. ADDRESS: **BIRMINGHAM, ALABAMA**

8. CITY & STATE: **BIRMINGHAM, ALABAMA**

9. PHONE NO.: **2-1234**

10. FAX NO.: **2-1234**

11. NAME OF MATERIAL: **HAYES AIRCRAFT CORP.**

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13. CITY & STATE: **BIRMINGHAM, ALABAMA**

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Once the purchase order is written at Hayes Aircraft Corporation, the rest of the paperwork, including receiving reports, partial shipment controls, material identification, material arrival notices and any other paper concerned is handled as a complete by-product of the purchase order writing.

identification tag and sent to the vendor. The tag, meanwhile, is attached to the goods for control purposes, providing visual evidence of what the material is and what job it is intended for.

A duplicate set of punched cards, produced automatically on the IBM equipment, is sent to stores and put in a locator file. When the material is withdrawn from stores to go into production, these cards are pulled and returned to the IBM machine to record the reduction in inventory. In the event of a partial shipment a new card is produced for the balance.

As a direct result of writing the purchase order, changes to inventory are made simply by processing punched cards. No manual writing is necessary.

A separate set of cards produced from the original tape is used to run daily reports on purchasing, keeping the treasurer, H. Norwood Sallee, and the rest of the management team informed

on how much money is being spent and how much material is coming in.

In the event of purchase order amendments, the procedure is exactly the same as with a regular order except that the amendment is written on the form and new cards are punched to account for the change.

Manual work has been largely eliminated and Hayes Aircraft gets material costs almost simultaneously with the writing of the purchase order—but with no extra effort. They have reassigned 32 personnel to other functions and save a great deal of money as a result of increased inventory turnover.

Materials Management and the P.A.

How to Sell Your Company on Materials Management

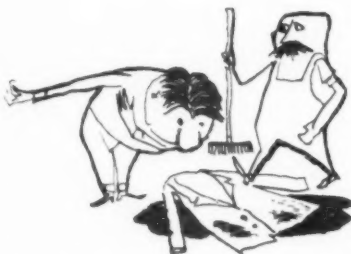
By Dean Ammer

IS MATERIALS management just a rationalized excuse for a power grab by the purchasing department? Or is it a new concept designed to boost profits and increase efficiency? The "truth" depends upon your point of view. To some operating departments, the move toward materials management will be regarded as just another effort by the purchasing man to make a name for himself. In some cases, this may be true. But most P.A.'s have a higher motive. They know that only with the materials management approach is it possible to properly integrate all the conflicting objectives of materials management.¹

But purchasing will never get to first base with a materials management program unless it can convince all interested departments that materials management isn't just a fancy name for a glory play on the part of the P.A. But here's the rub: Purchasing is going to have a tough time selling other departments because the materials management approach does give purchasing more scope and authority.

How can purchasing sell itself both to top management and to the individual department heads who are likely to instinctively oppose it? For an explanation of why this is true, see the articles in the January 5, February 2, and February 16 issues of PURCHASING Magazine.

pose a broader approach to materials management? Here is what some seasoned veterans in the battle to get recognition for purchasing suggest:



I. SHOW A WILLINGNESS TO SERVE

If purchasing bends over backwards to help other departments do a better job, it will be less open to the charge of trying to pull off a "power grab". The smart P.A. always does his best to make the other guy look good to top management. He'll help him and won't always blow his horn about it to top management. Instead, he'll frequently let other departments take the credit when they don't really deserve it. The P.A.'s goal should be to convince everyone in the organization that a strong and efficient purchasing organization not only helps the company but also makes everyone's job pleasanter and easier.

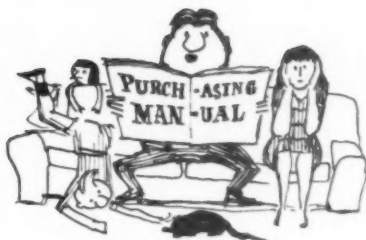
II DON'T BE A STUFFED SHIRT

Purchasing men have had to fight hard to achieve recognition. This makes them especially conscious of their status and prerogatives. Some P. A.'s may even be hypersensitive. They are prone to do everything but touch off a shooting war with production or engineering if there is the slightest infraction of the rules on who does the buying.

Cooler heads in the purchasing profession suggest a more strategic approach: overlook minor infractions; stand and fight only when the issue is really a big one. And, of course, the smart P. A.



doesn't hesitate to break his own rules on occasion. For example, he can afford to overlook a rigid rule against making personal purchases for employees to improve inter-departmental relations. Two potential recipients: the production control and quality control managers.



III NEVER STOP SELLING

The intelligent purchasing executive never loses sight of his objectives. He decides what he wants and never misses a chance to get in a plug for them. For example, whenever there's a problem between purchasing and material control, the P. A. ought to take advantage of the opportunity by pointing out how much more smoothly the plant would operate if these two activities were more closely integrated. The sales effort can often be less direct than this (and the more subtle it is, the better);—opportunities for the P. A. to make his point often arise in routine business conferences.



IV START WITH A COMMITTEE

One way to get the organization thinking in terms of an integrated approach to materials management is to start a materials management committee. The committee should include representatives from purchasing, production control, and traffic. These are the men who should decide long-range policies on all materials problems—inventory control, lead times, etc. Representatives from finance, engineering, sales, and manufacturing might also be included since their interests should certainly be considered when deciding materials policies.

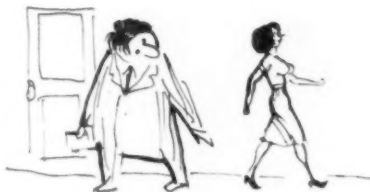


VI STUDY MATERIALS MANAGEMENT

If purchasing doesn't understand why an integrated approach

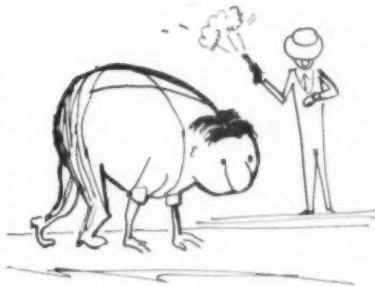
V HAVE LONG-RANGE PROGRAM

Regardless of whether there is a materials committee, the pur-



chasing department shouldn't be without a long-range program. It should study its objectives carefully and then make plans to achieve them. If purchasing starts planning in terms of broad materials management policies, it's bound to do a better job. This, in turn, will increase the chances that management will eventually realize that it can profit by giving purchasing broader scope in managing materials.

to materials management boosts profits, then certainly top management can't be expected to understand it. Purchasing men should carefully study the broad general management principles and know how they can be applied to materials. No. P. A. is so smart that he can ever afford to stop learning.



VII START IN YOUR OWN DEPARTMENT

Although top management's blessing is essential to a completely effective materials management program, this does not mean that purchasing can't have at least "half a program." Try to organize your department in accordance with the materials management approach. Get your people to think like materials managers, not like buyers. Even a make-shift program can often show striking results. And naturally you can always expand the program as management becomes better educated to the advantages of the materials management approach.

Should Purchasing Costs Vary With Sales Volume?

Here's a technique which any purchasing department can use to predict its purchasing costs. It's particularly applicable to contract work.

By Oscar T. Odegaard

WHEN your volume of purchases drops off by 50%, does the boss call you in and ask you to cut the purchasing budget by 50%? Many P.A.'s had a tough time convincing management during last year's recession that the purchasing workload didn't drop nearly as fast as purchasing dol-

lar volume. By the same token, when sales and volume of purchases are growing, the purchasing department need not be expanded proportionally.

Companies in relatively stable industries rarely have to worry about correlating changes in purchasing manpower needs with vol-

ume of purchases. But for some industries—most notably those doing a lot of defense work—this is a big problem. When a company is bidding on a big new construction contract, for example, it needs extremely accurate estimates of the amount of purchasing time necessary to handle the job. A "seat-of the pants" guesstimate just isn't good enough.

Progressive P.A.'s are now using statistical techniques to help estimate manpower needs. They assume three different variables determine total purchasing hours necessary for a job: (1) the dollar value of the contract; (2) the technical complexity and engineering time required for the job; and (3) the length of the schedule.

The statistical techniques involve correlating one of these variables with purchasing hours. This correlation is then adjusted to reflect the impact of the other variables.

To illustrate let's first correlate purchasing hours with engineering hours.



Oscar T. Odegaard

About the Author

Mr. Odegaard is extremely well qualified to write on the subject of purchase costs. He has been an industrial economist and was staff assistant to the purchasing department of C. F. Braun & Company, Alhambra, Calif. He is currently assistant to the controller of Western Gear Corporation, Lynwood, Calif. As a result of this background, the author is well-schooled in economic theory, knows the firing-line problems of purchasing, and has had first hand experience on the corporate finance end.

Let's assume you look at the records of 20 projects completed in the last few years. And let's also assume that the purchasing hours and engineering hours you find are those shown in figure 1.

On graph paper, plot twenty dots with the purchasing hours for each job read on the vertical axis, and the engineering hours read on the horizontal axis. The result is a scatter-diagram, figure 2. Note that there is some correlation. Jobs with higher engineering hours generally have higher purchasing hours.

The next step is to calculate the average relationship, which in this case appears to be a straight line. The method of least-squares can be used. The least-squares method gives not only a measure of the correlation or average, but also a recognized measure of the deviation from the average.

Method of Least-Squares

There are two equations used in the least-square method:

$$\Sigma y = na + b\Sigma x$$

$$\Sigma xy = a\Sigma x + b\Sigma x^2$$

Use them by substituting the totals given in figure 1 for purchasing hours (y) and engineering hours (x). Doing this, you get:

$$45,200 = 20a + 150,000b$$

and

$$405,050,000 = 150,000a + 1,423,040,000b$$

Solving the equations, you get $a = 610$, and $b = .22$.

Since a straight line will fit the dots as well as a curve, use the formula for a straight line:

$$y = a + bx$$

This gives:

Purchasing hours = $610 + 0.22$ x (Engineering Hours).

Plot this calculated average, and it gives a straight line up the center of the scattered dots, figure 3.

Here's what the calculated average means: for any contract where engineering takes 10,000 hours, purchasing will take about 2,800 hours. From any given figure for engineering hours, read up to the average line and then across to the purchasing scale to get the corresponding purchasing hours.

Figure 3 shows that a sizeable deviation from the average is the rule, not the exception. There are

n	y	x	x ²	xy	d	d ²
JOB #	PURCHASING HOURS	ENGINEERING HOURS				
1	2350	8200	67,240,000	19,270,000	100	10,000
2	2600	11000	121,000,000	28,600,000	450	202,500
3	1600	4000	16,000,000	6,400,000	150	22,500
4	600	1000	1,000,000	600,000	220	48,400
5	3400	12000	144,000,000	40,800,000	150	22,500
6	2800	9000	81,000,000	25,200,000	200	40,000
7	1600	6000	36,000,000	9,600,000	350	122,500
8	3000	13000	169,000,000	39,000,000	500	250,000
9	2200	5200	27,040,000	11,440,000	400	160,000
10	1200	2000	4,000,000	2,400,000	270	72,900
11	3200	10600	112,360,000	33,920,000	225	50,625
12	3800	13400	179,560,000	50,920,000	200	40,000
13	1000	3400	11,560,000	3,400,000	350	122,500
14	1800	7000	49,000,000	12,600,000	350	122,500
15	3400	7200	51,840,000	24,480,000	1200	1,440,000
16	2400	6600	43,560,000	15,840,000	350	122,500
17	3850	12400	153,760,000	47,740,000	460	211,600
18	800	600	360,000	480,000	70	4,900
19	2200	10000	100,000,000	22,000,000	620	384,400
20	1400	7400	54,760,000	10,360,000	800	640,000
TOTAL	45200	150000	1,423,040,000	405,050,000	7415	4,090,325

Fig. 1. Statistical data for 20 imaginary projects. Purchasing hours and engineering hours are represented by x and y. The deviation of y from the mean plotted in Fig. 3 is represented by d. From this data, the Standard Error of Estimate is computed. (See text)

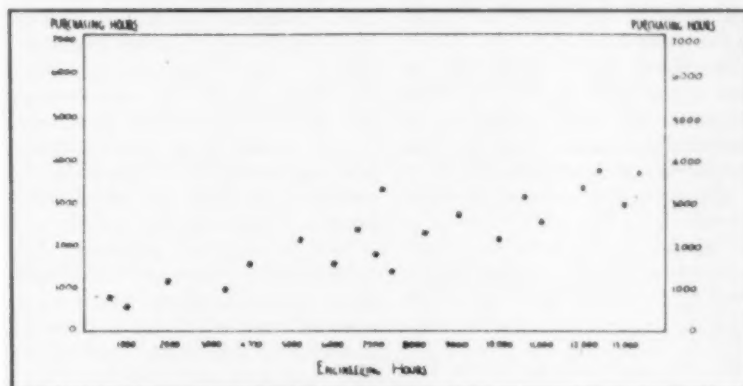


Fig. 2. To determine the relationship between purchasing time and engineering time, the first step is to plot actual experience on a number of projects.

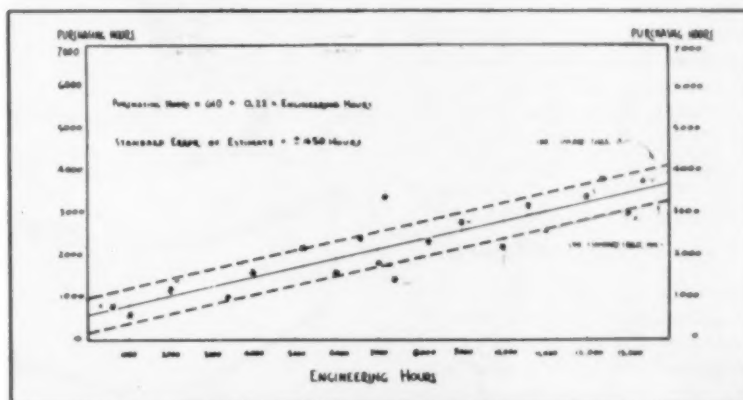


Fig. 3. When actual engineering and purchasing cost experience is plotted for a number of projects, it is possible to construct a curve which provides an estimate of time for any new project.

few contracts that have fallen exactly on the line. The measure of this deviation is important. It tells you to what extent you can rely on the correlation for predicting hours on future contracts. The measure of deviation is called the Standard Error of Estimate.

There are three steps in getting this Standard Error. First, determine the deviations of each of the twenty contracts on the chart. Use the formula to calculate the theoretical purchasing hours for each contract or measure directly off the graph. Then subtract these hours from the actual purchasing hours on each contract. The difference will be a plus figure in some cases, a minus figure in others. (Approximately the same figures can be obtained by measuring the vertical distance between each dot and the correlation line with a pair of dividers.)

Next, arrange the deviations, as shown in figure 1, under "d". Square each deviation, and add up the squares.

The third step is to divide the sum of the squares by n (in this case, 20), and to find the square root of the resulting figure. This square root is the Standard Error of Estimate. The general formula is:

$$S = \pm \sqrt{\frac{\sum d^2}{n}} = \pm \sqrt{\frac{4,090,325}{20}} = 450$$

So the standard error is 450 hours. This means that chances are two out of three that purchasing hours on any new contract will be within 450 hours of the average line.

Two important assumptions have been made here. One is that the deviations follow the normal probability curve. The other the same forces that determined purchasing hours on the twenty contracts studied will also determine purchasing on future contracts.

Use of Standard Error

Now that you have the Standard Error, how do you use it? Here's how:

Suppose you have a new contract with 10,000 estimated engineering hours and (from the correlation line of figure 3) 2,800 estimated hours for purchasing. The

Standard Error tells you that in 66% of the cases actual purchasing hours will be somewhere between 3,250 hours and 2,350 hours.

However, this is all based only on the correlation between purchasing hours and engineering hours. There are still two other factors which affect purchasing hours: the dollar amount of the contract and the length of the schedule.

You want to know, of course, which of these correlates most closely with purchasing hours. If it isn't obvious, the best way to find out is to go through the method just described for both of these other factors. The one with the smallest Standard Error has the closest correlation.

Tie-In Other Factors

Let's assume that you have a contract-type business where purchasing hours correlate most closely with engineering hours. You correlate purchasing hours with engineering hours and calculate the average relationship. Deviations from this relationship are caused by varying purchase dollar amounts and varying contract schedules. You calculate a measure of this deviation—the Standard Error of Estimate.

You must now attempt, by judgment, to evaluate how the other factors affect purchasing hours. Consider what you already know about the dollar amount of materials and the schedule. Try to judge how much these factors

will raise or lower purchasing hours. Add or deduct the estimated hours from your average figure. If the average figure thus adjusted is within one Standard Error plus or minus, it can stand as your official estimate of purchasing hours. If the adjusted figure is more than a Standard Error off, double-check your thinking about the effect of the other factors. An estimate that varies from the average by more than one Standard Error may be okay, but should be scrutinized carefully.

Judgment Still Needed

You have seen how the correlation average and the Standard Error together can guide your judgement.

In this discussion, purchasing hours were assumed to be the function of only three factors—engineering hours, material dollars, and schedule. But many other factors may affect purchasing hours. Some may be impossible to measure and only judgment can allow for their influence. In fact, the factors you can measure—dollar figures, for instance—sometimes must be adjusted for the effects of inflation before they can be used. And some correlations are better expressed with a curve than with a straight line.

But despite all the work involved, a good correlation is well worth while. It can help you feel that your estimate of purchasing costs is a reasonable target rather than a shot in the dark.



"Okay if using one of your fasteners will cut our assembly costs 50%, we'll use two and cut assembly costs to zero—"

How Much Fine Print

Does Your P.O. Need?

by Lyle Treadway

AS A PURCHASING EXECUTIVE, you must make certain decisions concerning the terms and conditions to be printed on your company's purchase order form. These decisions should be based on careful consideration of a number of factors having both practical and legal aspects. This is the second of a series of articles designed to help you make these decisions.

The first article of this series covered order terms and conditions from a broad legal standpoint. It indicated the ways in which the law interprets and applies these terms as a part of a contract to buy and sell. Two key points were made:

- Voluminous fine print may not be the best solution, even from a legal standpoint. Use of a few clear, concise statements of the essential matters on which the buyer needs legal protection is generally the best approach. And the reason for this is that courts will construe against the user any uncertain or misleading matter in printed forms. In fact, some courts have been outspoken in their criticism of forms loaded with fine print.

This is the second in a series of articles by Mr. Treadway on purchase order terms and conditions. The third article in the series will appear in the March 30 issue of PURCHASING Magazine. It will cover legal problems in the final phases of the purchasing cycle: receiving, inspection, etc. Mr. Treadway is well qualified to discuss purchasing legal problems. Besides being a graduate lawyer, he is purchasing agent of Federal Glass Company and is a former vice president of the National Association of Purchasing Agents.

- It's not good purchasing to complicate the order form with excessive fine print. To do so often ties the sellers' hands and feet. In fact, many suppliers view with alarm and hesitate to accept orders received on forms loaded with fine print. Much of your effort to build good relations can be nullified with such forms.

This second article begins the consideration of specific terms and conditions printed on the order form. To be covered are a number of commonly used order terms—and some which are not in general use. The idea is to help purchasing people decide whether

these printed terms really solve a problem and give the needed protection to their company.

Delivery Terms

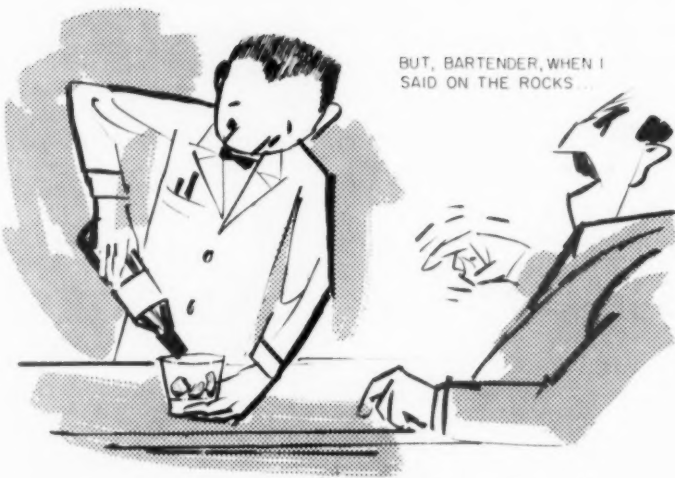
The first printed terms to be considered are those which have to do with delivery. The question is: what can order terms do for the buyer in asserting his right to prompt delivery from the supplier?

With high-speed and finely-timed production schedules to meet, the purchasing agent may need to insist on delivery at a specific time. So he must have the right to cancel and place the order

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THE CONTRACT, AND YOU GET
TO MEET CHARLEY PERSONALLY.



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The courts generally give the ordinary meaning of language to words that are used in the fine print on a purchase order. However, they would probably take the idiomatic meaning here.

elsewhere if the supplier cannot deliver at that time.

It is important for the purchasing agent to be reasonably familiar with the rules of law which apply to the matter of delivery time. He needs to know when and how he can assert the right to cancel for failure to deliver, and how the language of his order affects this right.

Reasonable Time

What if the order says nothing about time of delivery? When can the buyer insist that delivery be made or cancel the order? The courts long have held that in the absence of a stipulation as to time, the seller is bound to delivery within a "reasonable" time. This is not only a matter of common law decision, but is incorporated in the Uniform Sales Act, effective in approximately 34 states.

What is a reasonable time? Unfortunately, there is no single answer to this question except that reasonable time will depend upon the surrounding facts and circumstances. Obviously, reasonable time for delivery of perishable food products would be quite different from reasonable delivery of special machinery which was to be built to the buyer's specifications. The courts have held that without a specification as to time of delivery, the question becomes one of fact. Inquiry will be made as to the nature of the goods or services being purchased, the pre-

vious course of dealing between buyer and seller, and the knowledge which each party had concerning the situation and requirements of the other.

In Williston on Sales, Section 451, this recommendation is made: for his legal protection the buyer should notify the seller that, in his opinion, a reasonable time has elapsed, since often a "reasonable time" is indefinite. This is good advice. Many cases have held that the buyer may rescind the contract (cancel the order) if delivery is not made within a reasonable time. He is on stronger ground, however, if he first notifies the supplier that time has run out—in his opinion. **So the purchasing agent is well advised to specify a time of delivery if he will have any foreseeable cause to insist on early shipment.**

Many orders are issued with shipping instruction such as "immediately," "as soon as possible," "at once," "promptly," etc.

However, even when such terms are used the question still arises as to how much time must elapse before the P.A. can say "deliver or I'll cancel."

The courts hold the view that these terms, although indefinite, indicate the requirement of early delivery. For example, in a New Jersey case it was held that the words "ship immediately" might be explained to mean as much as a month. This was a situation in which the buyer knew, or should

have known, that the goods were to be processed before delivery. In another decision, the words "at once" were interpreted to mean without unreasonable delay.

Be Definite

Nevertheless, a careful consideration of such cases leads one to the conclusion that indefinite terms of delivery such as "rush," "immediately," etc. are of questionable legal effectiveness. The net result seems to be that the seller is still only bound to deliver within a "reasonable" time having regard to the fact that early delivery is needed. In other words, a "reasonable" time becomes shorter than it would be if words of urgency weren't used.

Purchase orders are frequently written which call for delivery "as released by buyer" or on a make and hold basis with shipping dates to be supplied later. Examination of case law pertinent to this situation indicates decisions especially favorable to the buyer. It has been held, for example, that the seller in order to rescind must inquire of the buyer whether he would take delivery. On the other hand, a New York decision was to the effect that failure of the buyer to demand delivery did not waive his right to rescind.

In an interesting Federal decision, the seller accepted an order for shipment of bags of rice as released by buyer, with the agreement of the purchaser that he would order out the rice no later than September 30, 1951. When the buyer failed to release by the date stipulated, the seller shipped the rice to him, but the buyer refused to accept. The seller then brought suit for the agreed purchase price.

In its opinion the court points out that failure by the buyer to call for delivery within the agreed time would authorize the seller to rescind the contract or to deliver to a public warehouse for the account of the purchaser. It does not, however, entitle him to ship to the buyer without the latter's agreement. The court said that shipment without release by the buyer is a breach of contract on seller's part.

(Turn to p. 98)

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Legal Tips on the Purchase Order

(1) It is generally desirable to include a term to this effect in the purchase order form: "If shipment is not made at the time specified, the seller reserves the right to cancel the order or any part thereof without obligation."

(2) Be as definite as possible in specifying delivery dates. Bear in mind that such terms as "rush" and "immediately" may be legally ineffective.

(3) Put a provision in your purchase order form to protect your company against patent and copyright infringements by the seller. Indicate that the seller carries the burden of any alleged infringement of patents and copyrights which arise from producing and selling the goods purchased.

When Is Time Important?

How strict can the purchasing agent be, legally, in requiring delivery from the supplier?

In a very early Rhode Island decision it appeared that the buyer agreed to purchase a stock of merchandise for cash and promised the seller that he would call with the money before nine in the morning of a certain day. When the buyer appeared a few minutes after nine the seller refused delivery (probably because he had a better offer in the meantime.) Holding for the buyer, the court pointed out that, under the rules of equity, parties cannot be capricious or arbitrary in the matter of the time of performance. In this respect the law will distinguish between a material and a trivial variance.

The current state of the law on this subject is summarized in the American Law Institute's Restatement of Contracts, Section 276:

(a) Unless the nature of the contract is such as to make performance on the exact day vital, or the contract in terms so provides, failure to perform on the day stated does not discharge the other party.

(b) In mercantile contracts time is important, and if the delay of one party is considerable, having reference to the nature of the transaction . . . and is not justified by the other party, the duty of the latter is discharged.

(c) Less delay operates as a

discharge where there has been no part performance.

From the foregoing it is obvious that the law does not favor strict enforcement of delivery in the absence of special circumstances. It is also clear that when not stipulated in the order or contract, courts will find "time of the essence" (This term is generally used in the law to describe any situation in which the time of performance is a condition which must be met by one party in order to enforce performance by the other.) **only when both parties had knowledge of the urgency of delivery.** Some states, including the Dakotas and Oklahoma, have even gone to the extent of adopting statutes providing that time is not of the essence in contracts unless expressly stipulated in the agreement.

The conclusion is inescapable, therefore, that the purchasing agent must insert a provision in his order making time of the essence if he has need to insist on strict delivery terms.

Another Point

One further point of law is worthy of mention in connection with the problem of deliveries. This point applies to situations where the buyer has made it clear that delivery must be made at a certain time but, for some reason, he still wishes to take delivery after the stipulated time has passed. This, of course, is a common condition in industrial purchasing. Perhaps your supplier is

late in delivery, but you still want to take shipment instead of cancelling the order. The law permits the injured party to waive the time requirement and hold the other to performance of the contract.

It is important for buyers to note that continued follow-up of an order after the stipulated delivery date does not, of itself, waive the right to cancel because of late shipment. In a Missouri case this was held only a forbearance and not a waiver of the right to cancel. However, if the buyer accepts shipment after cancellation of the order, some cases have held that he is deemed to waive the question of late delivery. Also, if the purchaser actually agrees with the seller to take late delivery, he then waives the right to rescind the order for failure to meet the specified date.

Patents and Copyrights

Many companies insert a provision in their purchase order form concerning patents and copyrights. Inclusion of such a provision in printed order terms and conditions can be generally recommended. Of course, the protection of a patent and copyright clause will rarely be invoked, but it can be highly important in certain situations.

Whether a purchaser is liable from the mere fact of buying an item produced by the seller in violation of patents or copyrights is a question on which the law has been unsettled. In the so-called "Mercoid cases" the doctrine of contributory infringement by purchasers is regarded as being greatly limited. However, other cases have held to the older theory that a buyer is liable through contributory infringement if he knowingly induces the seller to produce goods for him in violation of a patent.

In any event, purchasing agents are well advised to include a printed term in their order form which shifts to the seller the burden of any alleged infringement of patents and copyrights in producing and selling the goods purchased. This is where the burden normally belongs and the buyer's company is entitled to protection in this respect.



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Products and Ideas

Value Analysis Tips on Die Castings

HERE'S a production technique to consider when you're "value analyzing" small parts which are mass produced. It's the use of automatic machines to produce small zinc die cast and molded nylon products in finished form

at the rate of several hundred per minute.


Using these machines, parts come from the die or mold completely finished, and require no separate handling. Hand operations such as trimming gates and

sprues are eliminated. The machines are made by Gries Reproducer Corp., New Rochelle, N.Y.

Here are two case histories which compare the economies of this production technique with others.

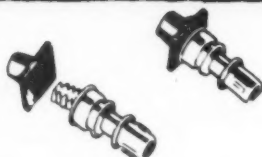
FOUR PRODUCTION methods for the fabrication of a setting gear and shaft used in an electric timer are compared here. The four techniques are: screw machining, heading and machining, conventional die casting, and automatic single-cavity die casting. As the illustration shows, the single-cavity die casting technique is the most economical. Using it, the part was produced of zinc alloy in a "one-shot" automatic operation—trimmed of flash and ready to use, requiring no secondary operations and only one inspection. There was no scrap. Costs per 100M and 500M were \$15 per M and \$11.50 per M respectively. Compared with the next cheapest method—conventional die casting—this meant a saving of 50% in lots of 100M and 59% in lots of 500M, with the percentage of savings rising as volume increased.

COMPARISON OF PRODUCTION METHODS



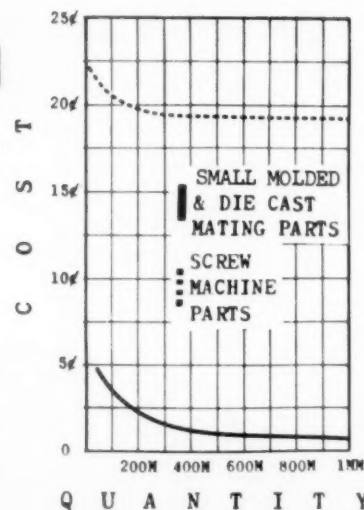
	ASSEMBLY OF SCREW MACHINE PARTS	HEADED AND MACHINED PART	CONVENTIONAL DIE CAST AND MACHINED PART	SMALL DIE CAST PART
PRODUCTION STEPS	4	4	3	1
PURCH. MAT'L. COST PER M.	Brass \$50	Steel \$6	Zinc Alloy \$5.82	Zinc Alloy \$5.64
SCRAP GENERATION	50%	10%	5%	None
INSPECTIONS	5	2	2	1
COST 100 M LOTS	\$70/M	\$45/M	\$50/M	\$15/M
COST 500 M LOTS	\$69/M	\$43.50/M	\$28/M	\$11.50/M

COMBINED USE OF SMALL MOLDED & DIE CAST PARTS



THIS IS AN example of the design flexibility that can be gained from the combined use of small molded nylon and zinc alloy die cast parts. A vital part of the G. E. electric blanket was a three-component assembly, consisting of a shaft and a nut, formerly machined from brass bar stock, plus a separate insulating part. Redesigned for automatic die casting and molding techniques, the zinc-nylon mating parts are now produced at a cost saving of about 80 percent. The die cast shaft of the redesigned unit has cast-in threads

to mate with the second part, which is molded of nylon in one integral piece, with accurate internal threads. Since the molded nylon "nut" also acts as the insulator, only two parts are now needed.



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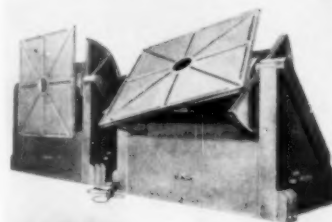
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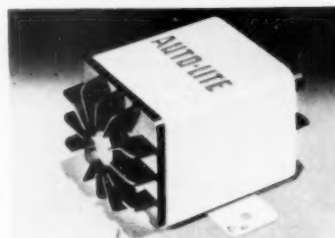
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High voltage transistorized ignition system is contained in a single package slightly larger than the conventional ignition coil, which it replaces, and can be installed in any battery ignition system within a matter of minutes. System provides maintenance free ignition, lifetime distributor contact service and eliminates condensers. Starting failures and poor starting due to "blued" contact points are eliminated. Top ignition performance for the full range of engine speeds is obtained. Electric Auto-Lite Co., Toledo 1, Ohio.

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PLYMOUTH, WIS.		AT CLEVELAND
JAMESBURG, N. J.		
FAIR LAWN, N. J.		

For More Information Write No. 203 on Inquiry Card—Page 32

No trouble calls with PUSHMATIC

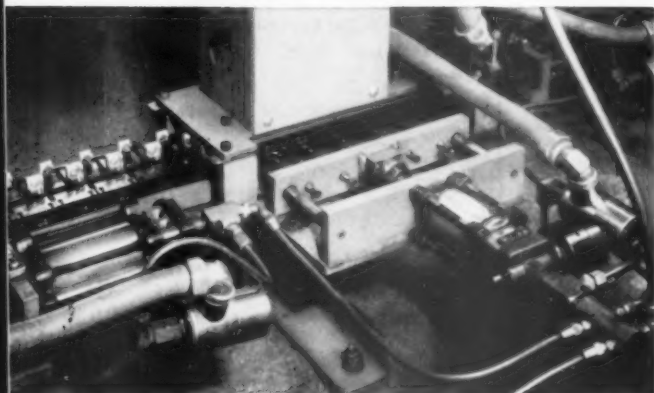


HERE'S WHY: Browse along our production line and it will be apparent why this circuit breaker has earned the reputation as the *safest and most dependable* on the market. Following are five of the dozen or more exhaustive checks and quality controls the Pushmatics undergo—over and beyond those required by Underwriters'.



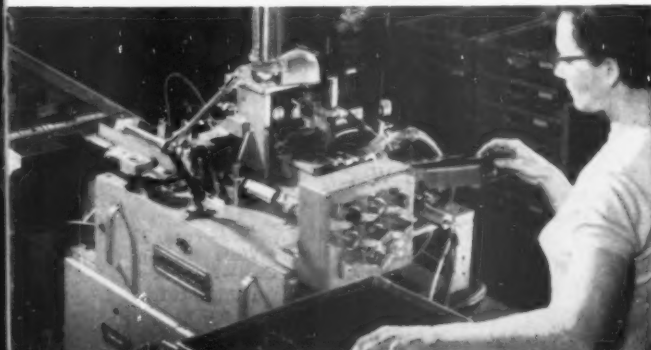
BULLDOG ELECTRIC PRODUCTS DIVISION
I-T-E CIRCUIT BREAKER COMPANY
BOX 177 • DETROIT 32, MICHIGAN

In Canada: 80 Clayson Rd., Toronto 15, Ont. Export Division: 13 East 40th St., New York 16, N.Y.



2. MECHANICAL BREAK-IN After assembly every Pushmatic is operated 50 times to make absolutely sure it functions well mechanically. Ten break-ins would be adequate . . . the extra 40 give you that much more assurance that it will never fail in manual or automatic operation.

4. SHORT CIRCUIT TEST Being thermal-magnetic devices, Pushmatics then undergo severe short circuit currents to test the instantaneous trip time of the magnetic element. If a breaker fails to trip within .02 seconds, it is automatically rejected by the machine. Extra safety, extra performance.



1. CALIBRATION In a dust-free room, where temperature is maintained at a constant 75°, operators calibrate *every* Pushmatic bi-metal assembly on a special optical viewer. Each bi-metal "latch" is adjusted to a dimensional accuracy of 1/1000 of an inch. Prior to this, the bi-metal had been heat-treated in an inert atmosphere to relieve stresses, "normalize" the metal.



3. CALIBRATION UNDER LOAD Brought back to its "set" temperature, each breaker is checked at 200% of rated current, and again at the equivalent of 125% of rating. Check Boards are accurate to 1/10 of a second. Samples from each production run are also tested at 100% of rating.

5. ENDURANCE TEST Underwriters' Laboratories run periodic endurance tests on BullDog Pushmatics®. The requirement — 10,000 operations, 6000 under load and 4000 with no load. But BullDog constantly checks out the breakers at 50,000 or more operations. *End trouble calls. Use Pushmatic!*



NOW...these major industrial rubber product lines from a single source



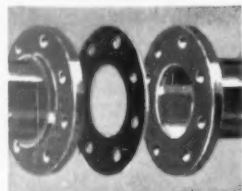
HYDRAULIC HOSE



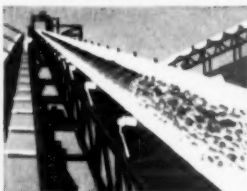
ROTARY DRILL HOSE



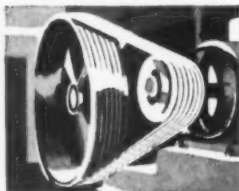
FIRE HOSE



RUBBER SHEET PACKING



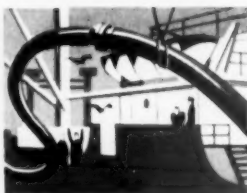
CONVEYOR BELTING



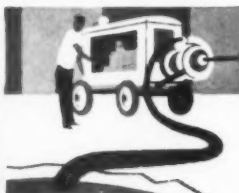
V-BELTS



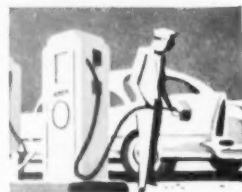
INDUSTRIAL HOSE



OIL SUCTION & DISCHARGE



CONTRACTORS' HOSE



GASOLINE HOSE



**INCREASED
NATIONWIDE COVERAGE**

With the recent merger with Thermoid, Porter's ability to serve you with top-quality industrial rubber products is expanded manifold. Complementary "Thermoid" and "Quaker" lines now allow you to deal with a single source—your former Thermoid or Quaker distributor—for the entire range of products shown here. To you, this joining of Thermoid and Quaker means faster service, closer by, than ever before. *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

**THERMOID
DIVISION**

PORTER

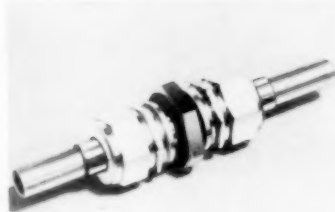
**H.K. PORTER
COMPANY, INC.**

Divisions: Connors Steel, Delta-Star Electric, Disston, Forge and Fittings, Leschen Wire Rope, Moulding, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

For More Information Write No. 206 on Inquiry Card—Page 32

Products

Self-Locking Coupling Nut for Hydraulic Lines



Fluid coupling nuts successfully incorporate integral, self-locking action. Fasteners assure maintenance of positive, leakproof joints on critical fuel, oil and refrigerant lines subject to vibration. Were designed to eliminate need for drilling coupling nuts, then tying down with safety wire to prevent vibratory loosening. Designated CN-8 series, nuts can be reused more than 15 times without impairing locking properties. Standard Pressed Steel Co., Jenkintown, Pa.

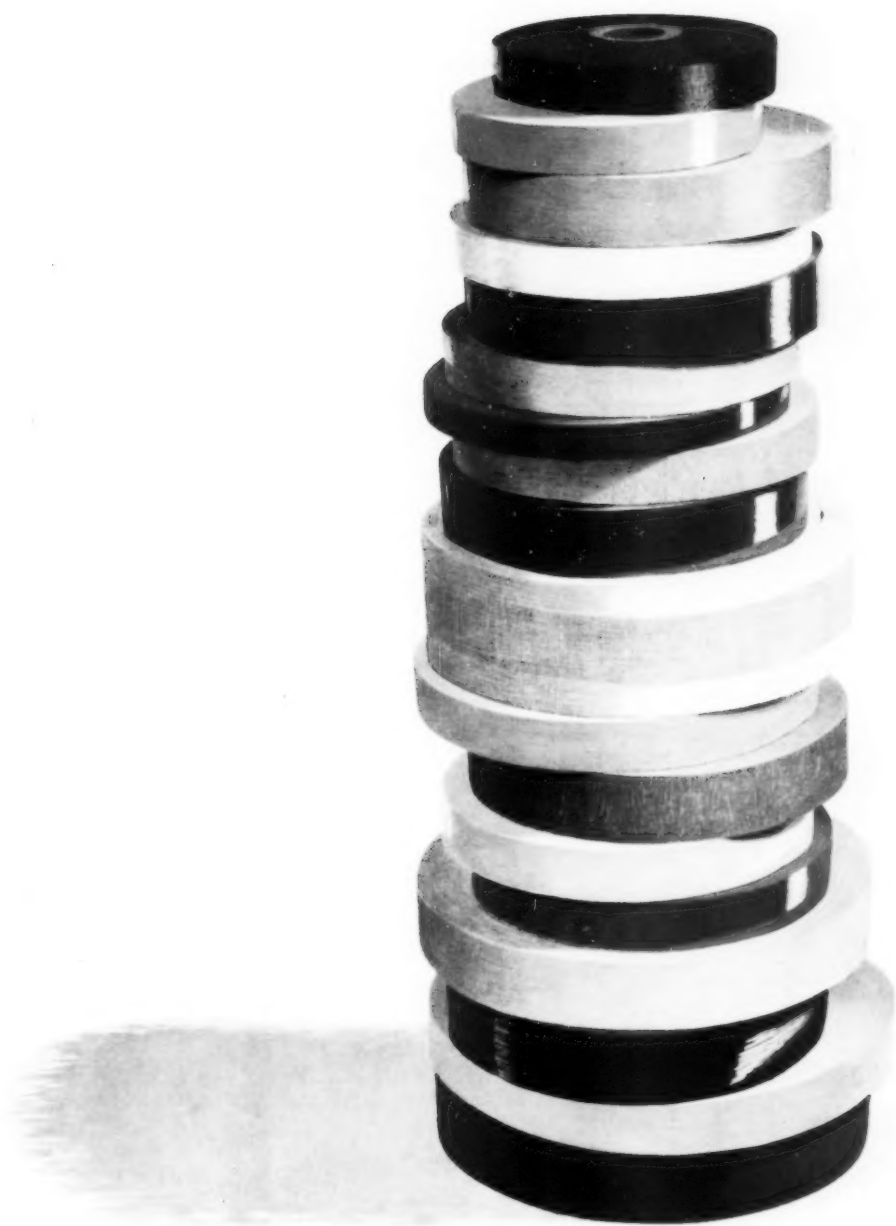
Write No. 21 on Inquiry Card—Page 32

Welder's Glove Reversible



Soft, flexible, heat - resistant horsehide glove has no exposed seams on either side. Singer Solo glove affords inter-changeability as the glove fits on either hand. Glove comes in brown and green, and comes packed singly so it can be ordered three at a time instead of as a pair. Singer Glove Mfg. Co., 860 West Weed St., Chicago 22, Ill.

Write No. 22 on Inquiry Card—Page 32
For More Information Write No. 207
on Inquiry Card—Page 32→
PURCHASING



whatever the job . . .

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PERMACEL *New Brunswick, N. J.* TAPES • ELECTRICAL INSULATING MATERIALS • ADHESIVES

They're tough, they're versatile
... and amazingly
low in cost!



ACE STUB DRILLS

The short, heavy duty flutes of Ace Stub Drills are ground into top quality pre-hardened high speed steel to give you keener cutting lips, extra strength, longer drill life. Ideal for close-to-work screw machine operations and portable drilling. And they're now stocked in 140 standard sizes that cost approximately 20% less than equivalent jobber length drills!

Call your local Ace Drill Distributor today!



NEW CATALOG covers the entire line of Ace "Ground from the Solid" High Speed Steel and Carbide Drills, Reamers, Drill Blanks and Special Drills. Send for it today!



ACE DRILL
ADRIAN, MICHIGAN

ORIGINATORS OF "GROUND-FROM-THE-SOLID" DRILLS
For More Information Write No. 208
on Inquiry Card—Page 32

Products

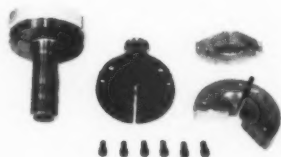
Numerically Controlled Vertical Turret Lathes



This Giddings & Lewis 54" vertical boring and turning mill is the world's first machine incorporating continuous path numerical control for turning type operation. Versatility of this discrete positioning system promises major changes in the economics of machining a variety of work on vertical turret lathes. Cost reductions come from quick setup, faster operation of the machine between cuts, higher cutting speeds, and consistent high quality of finished part. The tape system exercises complete control over feeds, speeds, turret indexing, automatic dwell, and coolant supply, as well as all auxiliary functions the machine is capable of performing, such as constant cutting speed, thread cutting, drum scoring, cutting of tapers, and step turning. Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

Write No. 23 on Inquiry Card—Page 32

Step Collet Reduces Costs 80%



Crest Step Collet, a master collet with replaceable jaws, can reduce collet costs. Unit fits all lathes using standard 5C collets. Precision machined radial groove for accurate relocation of jaws

(Please turn to page 110)

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Tough
service demands

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WHEELS**

Designed

TO SOLVE YOUR PROBLEMS

- High impact strength
- Resist oils, greases and most chemicals
- Wheels have beveled edges—protect floors better.
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- Will stand temperatures up to 200° F.

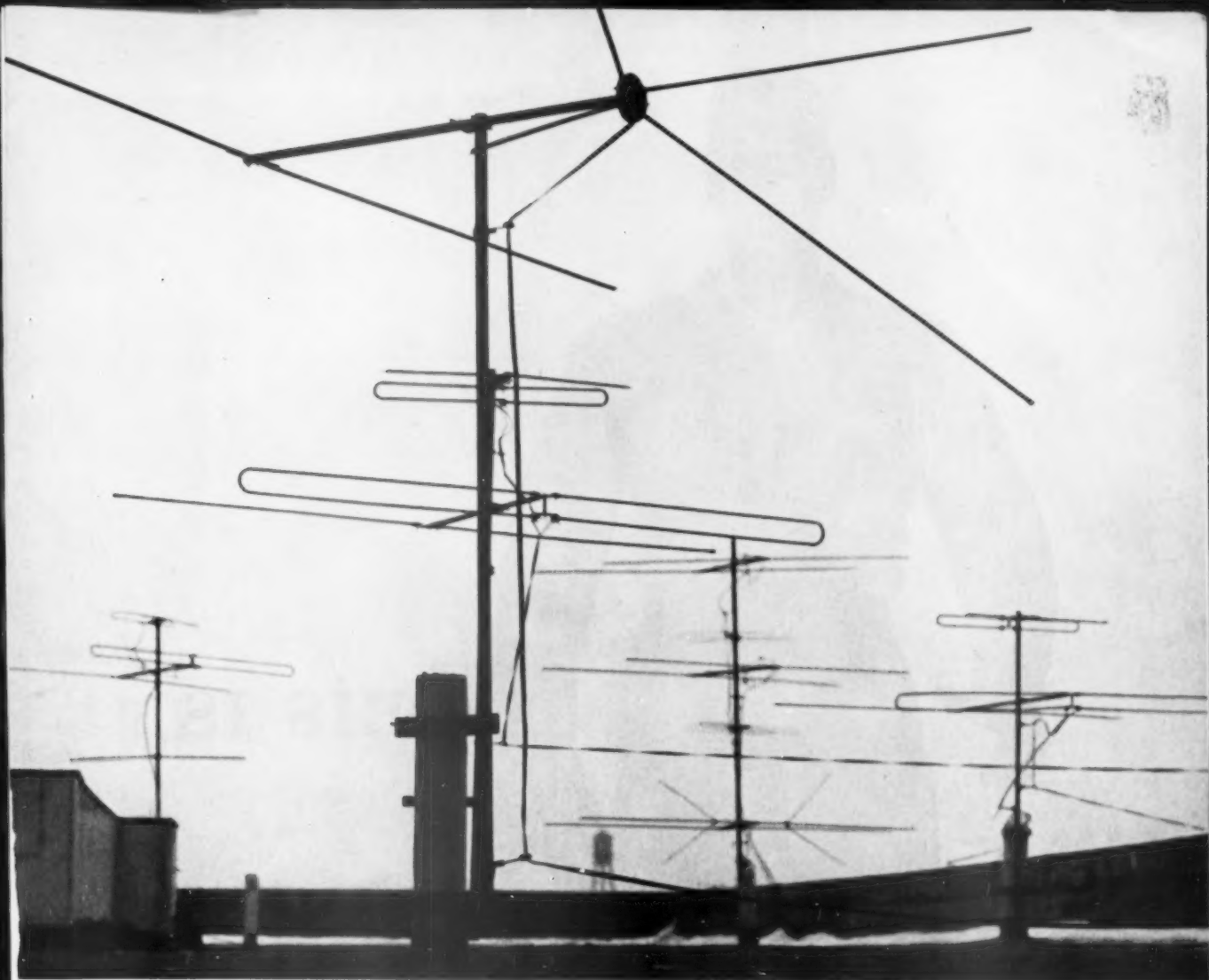
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For More Information Write No. 211
on Inquiry Card—Page 32
For More Information Write No. 212
on Inquiry Card—Page 32 →

PURCHASING



**WHICH ONES WILL LAST (and last, and last!)?
THOSE MADE OF WEIRKOTE® ZINC-COATED STEEL!**

Steel tubing that's protected against corrosion even under the most trying circumstances. Steel tubing that's easily fabricated to meet the most exacting specifications.

That's what you get in tubing made of Weirkote zinc-coated steel!

Weirkote's zinc coating—applied by the continuous process throughout, and so uniformly that every square inch is protected—is skin-tight. There's absolutely no flaking or peeling no matter how tortuous the crimping, twisting or other stresses of fabrication. In fact, Weirkote can be worked to the very limits of the steel itself.

The use of Weirkote can eliminate the need for any further coating process after fabrication. Its tight zinc coating is completely intact and remains so during fabrication and on the job. Weirkote zinc-coated steel tubing is particularly suited for jobs where weather is a factor to be taken into consideration.

Take a good long look at the possibilities and advantages of using Weirkote zinc-coated steel to meet your tubing requirements. For the complete story on Weirkote and how it can help you, write Weirton Steel Company, Weirton, West Virginia.



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COMPANY**

WEIRTON, WEST VIRGINIA

a division of

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THE BIGGEST, NEWEST IDEA IN INDUSTRIAL GLOVES!



NORTH • PVC Gloves by Jomac, job-proved for extra safety, extra wear

Check these advantages . . .

- **Extremely tough**—Last two to five times longer than ordinary industrial gloves
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- **Highly resistant**—Nonflammable, nonoxidizing and resistant to practically all chemicals—will not crack or peel

Give your employees the maximum protection afforded by North PVC Gloves. There is a size to fit every hand—fit it comfortably, and in this way lessen fatigue and increase efficiency. You will find production going up, accident rate going down. Available in knit-wrist, band top and gauntlet types—palm and partial back coated styles.

FREE OFFER—On your business letterhead, kindly furnish details of your working conditions—and we will send you a sample pair.

We also make a complete line of North PVC chemical and foul weather protective garments and the famous Jomac loop-pile industrial gloves, handguards and safety sleeves for hand-to-shoulder protection.



1600 SERIES. Fully coated, heavy duty.



1800 SERIES. North-Grip—Permruff surface; for handling slippery surfaces.

JOMAC Inc.

Dept. F, Philadelphia 38, Pa.

Associated companies and distributors throughout the world

For More Information Write No. 214 on Inquiry Card—Page 32

Products

(Continued from page 106)

for re-run jobs. This saves time and effort in set-ups. Soft jaws finished in steel and aluminum. Special jaws in plastic teflon, brass or other material for special work holding. Crest Precision, El Monte, California.

Write No. 24 on Inquiry Card—Page 32

Two-Way Control Valve



Two-way valve allows independently controlled flow in either or both directions. Available in standard IPS from 1/8" to 3/4," the units are adaptable to hydraulic or pneumatic applications in pressures as high as 5000 PSI. Valves are female threaded to dryseal specifications and are available in brass, steel, aluminum, stainless, and special alloys. True-flo Valve Co., Inc., Everett 49, Mass.

Write No. 25 on Inquiry Card—Page 32

Automatic Metering Pump



An automatic metering pump adjusts pumping rate from zero to full capacity by signals from

(Please turn to page 114)

PURCHASING

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in a modern metal
you should research *brass*...
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For More Information Write No. 215 on Inquiry Card—Page 32

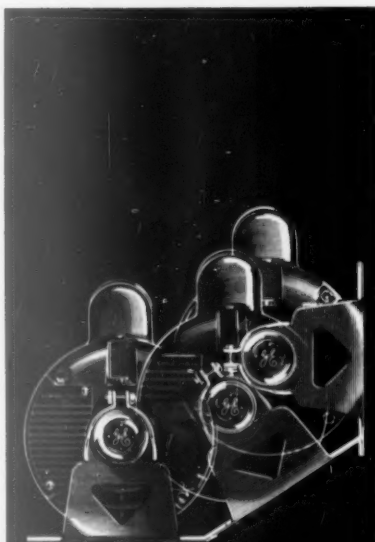
MARCH 16, 1959

111



PURCHASING AGENTS...

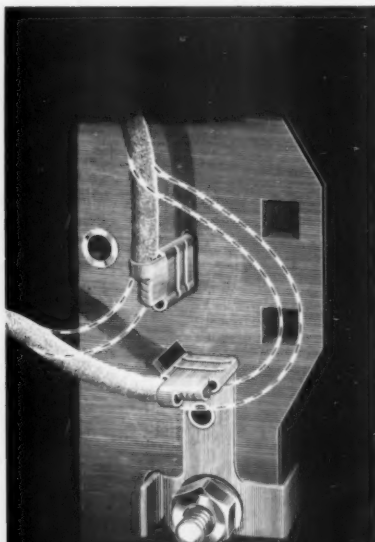
SIX WAYS



MOUNTING VERSATILITY

Cradle bases, both solid and resilient, allow rotation within base

You can rotate the Form G motor within the cradle base to take advantage of its drip-proof design, or you can position the motor with the capacitor at various angles for tight-squeeze applications. Or, you can remove the cradle base if you don't need it for your application. G-E Form G mounting versatility can mean greater design flexibility for you!



FAST ROTATION CHANGE

Now you can reverse Form G shaft rotation in less than 10 seconds

No need to specially order motors to meet your rotation requirements. G.E.'s Form G motor features a new wiring method that lets you change rotation in seconds. Quick connectors make the change fast and positive. Just interchange the two motor leads on the terminal board. That's all. Require fast, easy rotation change? The Form G is your motor!



EASY, DIRECT MOUNTING

Close end shield tolerances allow direct mounting without costly machining

General Electric standard Form G's can be mounted directly on your product without expensive machining or costly brackets. Close end shield tolerances, plus inherent shaft-to-end shield concentricity, lets you mount General Electric's Form G's with simple through bolts. This feature could be a real money saver for you. Why not investigate it today?



GENERAL  ELECTRIC

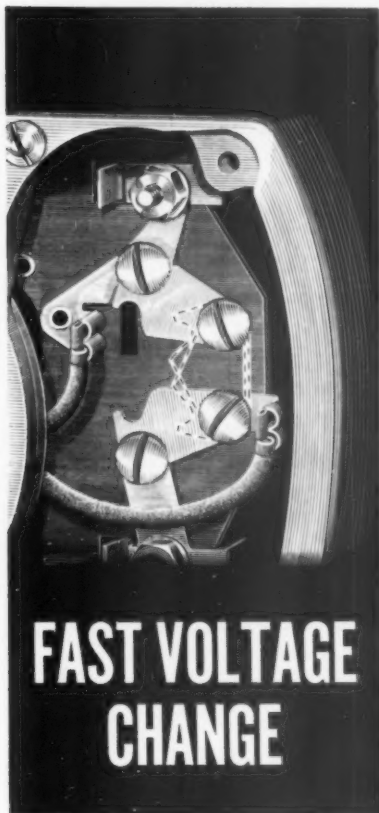
GENERAL  ELECTRIC

GENERAL  ELECTRIC

JUST ASK YOUR GENERAL ELECTRIC SALES ENGINEER

Cut costs with General Electric Form G motors...

MORE VERSATILE



FAST VOLTAGE CHANGE

Unique sliding plates on terminal boards make voltage change simple

Reduce inventory, simplify ordering! You can change General Electric Form G motors from 115 v to 230 v operation (or vice versa) in 1/5th the time, without confusion and error. No special tools required! A screwdriver is all you need. Just loosen the four screws, pivot the plates to the new position and tighten the screws. That's all there is to it!



ALL-ANGLE OPERATION

Special bearing and oil retention system permits mounting in any position

Mount it horizontally, vertically—even upside-down—the new Form G has the versatility to match the design and space requirements of your product. An advanced bearing and full oil retention system allows you to mount the Form G in any position and still be sure of getting faithful motor performance. In any position, Form G's do the job!



COMPLETE LINE

Full line of Form G's means the right motor for every application

There's a standard Form G motor to meet your exact product requirements. No need for costly specials. Over 850 basic models—and thousands of variations—are available on a mass-production basis. Let your General Electric Sales Engineer show you the all-around versatility of Form G motors and how they can provide important savings for you!



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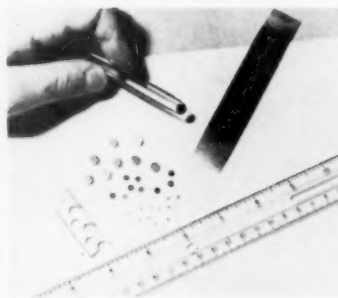
Products

(Continued from page 110)

pneumatic instruments. Called Auto-Pneumatic Micro-flo Pulsafeeder. Theoretical capacity ranges from 1040 to 2300 ml./hr. at 0 psig. Pressures up to 2,000 psig can be accommodated. It is designed to give the process industries a means of automatically metering chemicals without using constant level controls, high head tanks, measuring tanks or stuffing box pumps. It is explosion proof and designed for heavy duty continuous service. Process Equipment Division, Lapp Insulator Co., Inc., LeRoy, New York.

Write No. 26 on Inquiry Card—Page 32

Rhenium Metal Available



Commercial production of wrought rhenium rod, wire, and strip is being scheduled by the Research & Development Department of Chase Brass & Copper Co., Waterbury, Conn. Current applications of the comparatively new metal, and research into new uses, have increased its consumption by over 400 percent in the past few years. Although a rare metal, sufficient quantities are available to warrant its consideration for important commercial applications. Rhenium is an extremely high-strength (tensile strength up to 350,000 p.s.i.), high-temperature (melting point 5756°F.) metal that is proving of great interest in the high temperature technology and electrical and electronic reliability, aspects of rocket and missile work.

Write No. 27 on Inquiry Card—Page 32

ALL-NEW ALEMITE "77" LUBRICANT PUMP

packs most power

FOR HIGHEST PERFORMANCE!

68% More Powerful . . . outperforms any other air-operated lubricant pump of its class on the market today! The all-new 5.2 horsepower Alemite "77" Pump assures smoothest, fastest delivery of all lubricants, through longest lines!

Three Master Pressure Ratios for unequalled delivery of all lubricants — fluid, semi-solid and heavy fibrous types. Lightweight, rust-proof aluminum construction.

Precision Engineered from finest quality materials—designed for outstanding ease of operation and maximum performance. Models for 120-lb. or 400-lb. drums — for all industrial applications.

All-New Alemite "77" Features!

- **Volume Air Distributing Valve**—self-seating, self-cleaning, volume porting
- **Modern-Design, Highly Efficient Toggle Trip Mechanism** provides balanced pressure on shuttle . . . won't bind
- **Straight-Line Exhaust** has extra-large port for highest pump efficiency
- **Hardened Steel Piston and Cylinder**, lapped to a precision fit of 125 millionths of an inch
- **All-Steel Primer Valve**, ground to a perfect seal . . . hardened for abrasion resistance
- **Dynamic Primer** assures priming and pumping of heaviest lubricants.



ALEMITE
DIVISION
STEWART-WARNER
CORPORATION

Dept. Z-39, 1850 Diversey Parkway, Chicago 14, Illinois

For More Information Write No. 219 on Inquiry Card—Page 32

MARCH 16, 1959



THREE POWERFUL "77" MODELS

- **High-pressure** (40 to 1 ratio) for light-bodied and fibrous greases. Delivery on both up and down stroke.
- **Medium-pressure** (25 to 1 ratio) for heavyweight oils and light-bodied greases. Delivery on both up and down strokes.
- **Volume delivery** (6 to 1 ratio) for light-bodied fluid lubricants. Single-acting pump mechanism.

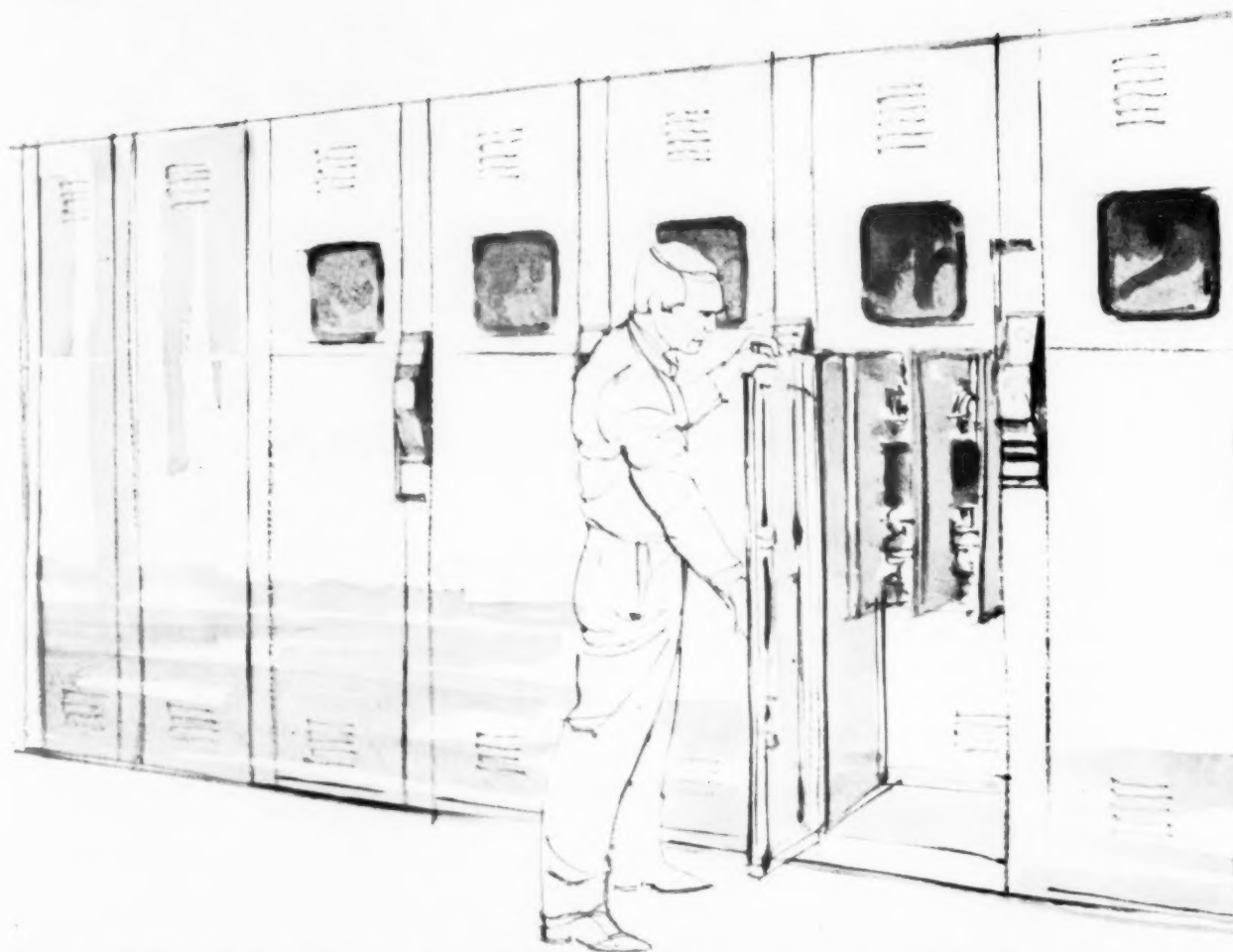


Write for New Alemite "77" Pump Catalog!





I-T-E CIRCUIT BREAKER COMPANY



ECONOMIZERS

Here's dependable, space-saving switching and fused protection for main circuits that even your most cost-conscious customers will applaud. I-T-E Power Switching Centers require only a low investment. Unique I-T-E standardized cubicles and building block construction reduce engineering expense and shorten time between order and delivery. Equipment arrives on the job in sturdy, preassembled units for easy installation. Absence of delicate parts simplifies work for contractors.

For greater safety, I-T-E power switches can close into fault

... without risk to operator or equipment. In addition, key interlocks prohibit the opening of fuse compartment doors while switches are closed. Remote or automatic controls, with electropneumatic operators, may also be provided. Switching center ratings range up to 14.4 kv and 1200 amp.

Such economical equipment with so many extra advantages is typical with I-T-E ... where reputation for extra value applies to all I-T-E electrical equipment. Make it a habit to think of I-T-E when you specify. Others who have done so rarely ever go back to anything else.



Single circuit protection and control. I-T-E URELITE individually enclosed K-Line circuit breakers offer unmatched safety and convenience. Main disconnect contacts are visible through side window. New pulldown handle action provides quick manual make for protection of contacts and operator. Wide range overcurrent trip device permits easy adjustment of breaker setting as user's load increases. Saves cost of replacing breaker components.



Self-contained substation. Saves installation cost. I-T-E TRANFO-UNIT combines primary disconnect, transformer and secondary circuit breaker all in one package. Simplifies ordering. Delivered complete. Easy to install. No complicated assembly of separate parts. Gives neat appearance. Use for incoming power up to 3000 kva. Or spot near load areas in large plants.



Complete range of ratings—I-T-E CORDON® circuit breakers are available in ratings for a wide number of applications. Provide up to 100,000 amp interrupting capacity with molded case construction. Save 50% switchboard space. Cost approximately one-third less than alternative devices. Ideal for protection of circuits supplied by high-current-capacity sources. Can be supplied loose or individually enclosed.

I-T-E Circuit Breaker Company
1900 Hamilton St., Philadelphia 30, Pa.

P-1

- | | |
|---|--|
| <input type="checkbox"/> Power switching centers | <input type="checkbox"/> TRANFO-UNITS |
| <input type="checkbox"/> URELITE circuit breakers | <input type="checkbox"/> Molded case circuit breakers |
| <input type="checkbox"/> Secondary unit substations | <input type="checkbox"/> Metal-clad switchgear (5 and 15 kv) |
| <input type="checkbox"/> CORDON circuit breakers | <input type="checkbox"/> D-c circuit breakers |
| <input type="checkbox"/> Other _____ | |

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

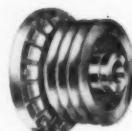
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TORQUE-ARM

*America's most widely used
shaft mounted speed reducers!*



FLEXIDYNE

The Dry Fluid Drive

New soft starts... overload protection!



TAPER-LOCK CHAIN COUPLINGS

No reboring — no waiting!

Write for Bulletins!

- ✓ Torque-Arm — 55 models — data.
- ✓ Flexidyne Drives & Couplings.
- ✓ Chain Couplings and Sprockets.

DODGE MANUFACTURING CORPORATION
1300 Union Street • Mishawaka, Indiana

DODGE

of Mishawaka, Ind.

For More Information Write No. 221
on Inquiry Card—Page 32

Products

Automatic Street Cleaner



The Activeaire Automatic Street Cleaner is a gasoline powered, vacuum type trash pick-up. It picks up all paper litter; cups, plates, popcorn boxes, spoons, etc., and automatically smashes and packs them into attached burlap bag with outer dust catcher. 16 gauge steel construction throughout. Low center of gravity and ball bearing wheels with extra large semi-pneumatic tires assure easy handling and turning at all times. Large fuel tank permits hours of operation without refueling. A 30" wide intake scoop allows greater ground coverage for quicker trash removal. Activeaire Devices, Inc., 1537 Bergen St., Brooklyn 13, N.Y.

Write No. 28 on Inquiry Card—Page 32

Machine Tabs Shipping Stencils On Continuous Forms

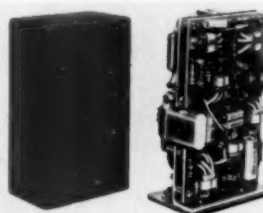


Machine for tabbing shipping stencils on continuous forms. The Weber Tabber Model 300 places shipment addressing stencils over the address section, or anywhere that is desired on the

form, automatically at an adjustable speed of up to 2400 per hour. Also, it counts the forms as they are tabbed. After tabbing, forms and stencils are prepared with customer's address simultaneously by typewriter, automatic accounting equipment and other integrated date processing equipment. Stencil is then sent to shipping department and placed upon a Weber handprinter for direct to carton addressing or used with Weber label printing machines. Weber Marking Systems, Mount Prospect, Ill.

Write No. 29 on Inquiry Card—Page 32

All Transistor Voltage Comparator



Basic test module greatly simplifies test and control equipment design. 200 Series Voltage Comparator trips a DPDT relay output when the unknown signal input exceeds the value of the known reference input. Utilizing direct voltage comparison, the most reliable technique for making accurate programmed measurements with computer speed, the small (2 9/16" x 1 13/16" x 4 1/8"), lightweight (12 ounces) test/control device has virtually unlimited applications, e.g., military ground support equipment, airborne instrumentation, modular test equipment, alarm/control systems and many data gathering and processing systems. Has high sensitivity, 5 millivolts AC, 10 millivolts DC; high input impedance 2 megohms (min.); low power requirement, 115V 400 cycles 1 watt with relay operating (0.1 watt with relay non-operating); phase or polarity sensitivity; and no zero drift with DC inputs. The output relay contact ratings are 2 amps at 28V DC. Trio Laboratories, Inc., Plainview, Long Island, N.Y.

Write No. 30 on Inquiry Card—Page 32

The big advantages of Taper-Lock mounting are now available for practically all of your sprocket installations. Below is listed the new wide range of types and sizes offered by Dodge!

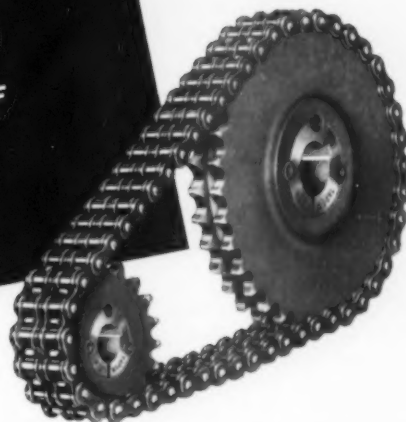
This important expansion of the Dodge line is the result of the enormous popularity of the Taper-Lock idea. Taper-Lock Sprockets are *modern*. Industry likes them because they go straight from shelf to shaft without

machining—saving time. They are “easy on—easy off”—saving work. Their bushings can be re-used, not only in replacement sprockets, but in sprockets of different sizes and also in Taper-Lock Sheaves, Couplings, Conveyor Pulleys. Taper-Lock saves inventory—and money!

Dodge Taper-Lock Sprockets and Dodge Roller Chain are available through your local Dodge Distributor. Call him. Or write us for bulletin.



No Reboring!
No Keyseating!
No Waiting!



CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for “Dodge Transmissioneer.”

● **DOUBLE PITCH CHAIN and SPROCKETS**

Transmission Series (No. 2040 to 2080) and Conveyor Series (No. 2040 to 2100). Sprockets to 112 teeth—including, for the first time, stock sprockets of 17, 19, 21, 23, 25 and 35 teeth *made especially for double pitch chain*. Introduced by Dodge, these sprockets are designed for even distribution of tooth engagement and absolute accuracy of mesh. Wear is reduced by half. Life of chain and sprocket is doubled!

● **PLATE SPROCKETS**

Steel Plate, Type A. No. 35 to 120. Mandrel bore, bored-to-size or Taper-Lock.

● **SINGLE STRAND CHAIN and SPROCKETS**

No. 35 to 160. Sprockets to 112 teeth.

● **DOUBLE STRAND CHAIN and SPROCKETS**

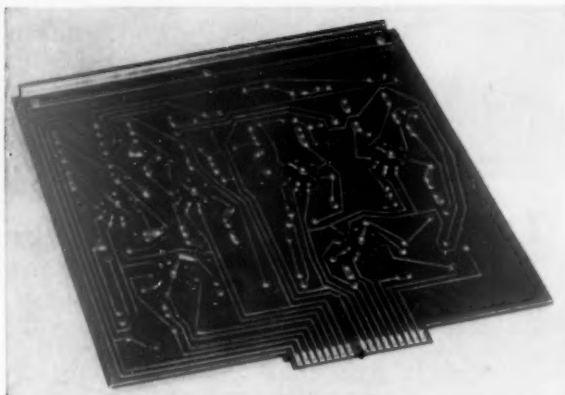
No. 35-2 to 80-2. Sprockets to 112 teeth.

● **STANDARD ATTACHMENTS**

ALL TO ASA STANDARDS

DODGE MANUFACTURING CORPORATION, 1300 Union Street, Mishawaka, Indiana

CD F PLASTICS AND FIBRE



Heart of the best printed circuits—

CDF Di-Clad[®] LAMINATES

Printed-circuit dependability begins at the base, and that's where CDF excels. Only CDF offers the combination of Teflon[®] resin and glass fabric cloth for use under sustained temperatures of 180°C. In addition, CDF offers a full range of Di-Clad laminates to meet every known demand of printed circuitry. High foil-bond strengths withstand soldering heats, reduce assembly rejects. Full line of Di-Clad grades — glass fabric and paper-base — with Teflon[®], epoxy, and phenolic resins. Assembly costs go down when the job is done on CDF Di-Clads! Write for CDF Di-Clad Folder DC-58.

*duPont trademark for its tetrafluoroethylene resin

CDF PRODUCTS OF TEFLON

CDF produces an unequalled range of electromechanical parts of Teflon[®] — such as small- and large-diameter thin-wall tubing, glass-fabric laminates, flexible insulating tapes, sheets, rods, tubes, and finished parts. Now also available: cementable Teflon in supported and unsupported forms; can be cemented to itself and to most other materials with commercial adhesives. If you have a potential use for a product made from unsupported or reinforced Teflon — from tapes to high-heat-resistant printed-circuit laminates — your CDF sales engineer is the man to call. Meanwhile, write for the new CDF Teflon Folders.

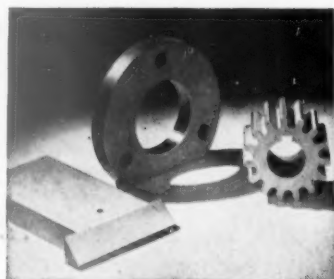
*duPont trademark for its tetrafluoroethylene resin



CDF HIGH-HEAT ELECTRICAL TAPES

Flexible insulating tapes for hand or automatic winding, made of glass-supported silicone rubber, silicone varnish, Micabond, with and without backings; and unsupported and glass-supported Teflon[®]. Color identification — CDF tapes of Teflon are made in the standard identifying colors. Call your CDF sales engineer, or write for test samples.

*duPont trademark for its tetrafluoroethylene resin



DIAMOND VULCANIZED[®] FIBRE

keeps costs down

Known for over sixty years as the standard of quality in fibre, Diamond[®] Vulcanized Fibre is made in many grades (bone, fish-paper, trunk, commercial, built-up) and is available in sheets, rods, tubes, strips, rolls, fabricated parts, and formed specialties. Write for Catalog DVF-58.

LOW-COST VULCOID is Resin-impregnated Vulcanized Fibre. Vulcoid (made only by CDF) is an intermediate insulation material. It combines the desirable arc-resistance and mechanical properties of vulcanized fibre with many of the good qualities of a phenolic laminate. UL-approved as Class A insulation in electrical equipment. Bearing applications requiring high precision have been successful with Vulcoid. Write for Bulletin V-58.



CDF CELORON[®] MOLDED PRODUCTS

Celoron is a molded-macerated and/or combination laminated base bonded with phenolic resins. High strength, long life, and low cost are the characteristics of molded electrical or mechanical parts made from CDF Celoron[®]. Its good electrical properties make Celoron an ideal molded insulator, while its high mechanical strength makes it an excellent material for gears, couplings, intricate loom parts, etc. Write for CDF Catalog C-58, or contact your nearest CDF sales engineer.

PURCHASING NEWS



CDF DILECTO® LAMINATED PLASTICS



for electrical and mechanical applications

DILECTO®, made in scores of grades, means high-quality laminated plastics made for rigorous duty in electrical, electronic, and mechanical equipment. Characteristics vary with the grade, so get the expert assistance of your CDF sales engineer.

RESINS AVAILABLE IN DILECTO:

Phenolic	Epoxy	Polyester
Heat-resistant Phenolic	Melamine	Teflon*
Silicone		

BASES FOR DILECTO:

Glass Fabric	Glass Mat
Nylon Fabric	Felted Asbestos
Asbestos Fabric	Non-woven Cotton Mat
Cotton Fabric	Paper (either cellulose or asbestos)

CDF gives fast technical and delivery service on sheets, tubes, rods, or complete fabricated parts of Dilecto plastics. Write for Catalog D-55-C.

*duPont trademark for its tetrafluoroethylene resin

For a better motor or generator —



CDF MICABOND® INSULATING PARTS

CDF mica V-rings and slot liners insulate America's best-selling motors and generators. Finest-quality mica splittings insure highest heat-resistance and insulation under severe operating conditions.

Forms of Micabond® available: Sheets; Tubing; Tapes (with backings of cotton, silk, paper, woven glass, and Mylar polyester film); Fabricated Parts of various shapes such as Mica segments. CDF supplies and fabricates Micabond to your strictest specifications — on time and at low cost. Call your CDF sales engineer or write for samples of Micabond and Catalog M-58.

†duPont trademark



PLASTICS FABRICATION BY CDF

SAVES YOU TIME, MONEY, WORRY

Let CDF's well-equipped machine shops assume the complete responsibility for delivery of your fabricated parts as specified and on time. No time is lost at CDF between raw-material production and final fabrication. When you let CDF do it for you, there's no problem of shortages, rejects, waste. Undivided responsibility pays off for you!

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709 East 38th St.
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LINcoln 1-7660

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NEW YORK SCarsdale 5-1600
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CONTINENTAL-DIAMOND FIBRE

A SUBSIDIARY OF THE ~~Bank~~ COMPANY • NEWARK 41, DELAWARE

For More Information Write No. 223 on Inquiry Card—Page 32

HOW

to know you're
getting the quality
you want



for full top threads, so important on sheet metal tapping screws ... and the shorter the fastener or the thinner the material, the more important full top threads become to your profit. Without that extra mark of quality, the fasteners will spin instead of tighten, cost you extra dollars out of profit to replace them. Full top threads are consistently built into American fasteners.



Look here for sharp points that pierce cleanly and help each fastener drive straight and true. Sharp points, like full top threads contribute to your profit picture because they eliminate the extra costs of replacing poor materials. Sharp points are another mark of consistent quality you get with American.

Write today for samples of this American quality and a free stock list.

Profit Improvement Program

Quality fasteners cost more to produce ... improve your profits when used!

Buy here

American
SCREW COMPANY

Williamston, Conn. • Detroit, Mich. • Chicago, Ill.

For More Information Write No. 224
on Inquiry Card—Page 32

Products

Multichannel Data Recorder



Multichannel data recorder is versatile in Readout and Display. A data process that translates frequencies, currents and voltages into visible, precise records. It is capable of up to 1000 discrete marks (or channels) on a 19 inch wide dry electrosensitive recording paper. It is a multistylus scanner that: has a precise rectilinear scanning system; has a scanning rate, or sampling rate of channels up to 2 scans per second; records analog, digital and alpha numeric data; and has a variable scale width for selected channels. Times Facsimile Corp., 540 W. 58th St., N. Y. 19, N. Y.

Write No. 31 on Inquiry Card—Page 32



"Put that man in Purchasing! . . ."



From raw material to finished product, she's the boss . . . on top of the job and directing every turn.

For the same reasons, nobody can provide as complete application and fabrication engineering service on PRECISION BERYLLIUM COPPER STRIP as the company who controls its quality in each step of manufacturing from raw ore to packaging of finished strip.

Whether your problem requires design assistance, development of manufacturing techniques, special heat treatment or any other processing information, call your nearest Pennrold Service Center for an experienced field engineer.

The Brush Beryllium Co. and its Pennrold Division offer you the world's most completely integrated facilities for the production of the finest precision beryllium copper strip rolled today. With it, you get complete application engineering service, the widest range of sizes (down to 0.0005" thick) and the largest coil size in the industry (for greater uniformity and faster delivery).

Complete application and fabrication engineering service is also available to users of precision rolled phosphor bronze and other special purpose alloy strip.

For more information, quotations, or fast delivery—call your nearest Pennrold Service Center, today!



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West Paterson, N. J.—Clifford 6-1085
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Pittsburgh & Cleveland—Cleveland, Endicott 1-5409
Chicago, Ill.—Gladstone 5-7850
Detroit, Mich.—Tuxedo 4-2530
St. Louis, Mo.—Sherwood 1-6423
Greensboro, N. C.—Broadway 3-5973
Los Angeles, Calif.—Pleasant 3-5531

For More Information Write No. 258
on Inquiry Card—Page 32

For More Information Write No. 225
on Inquiry Card—Page 32→

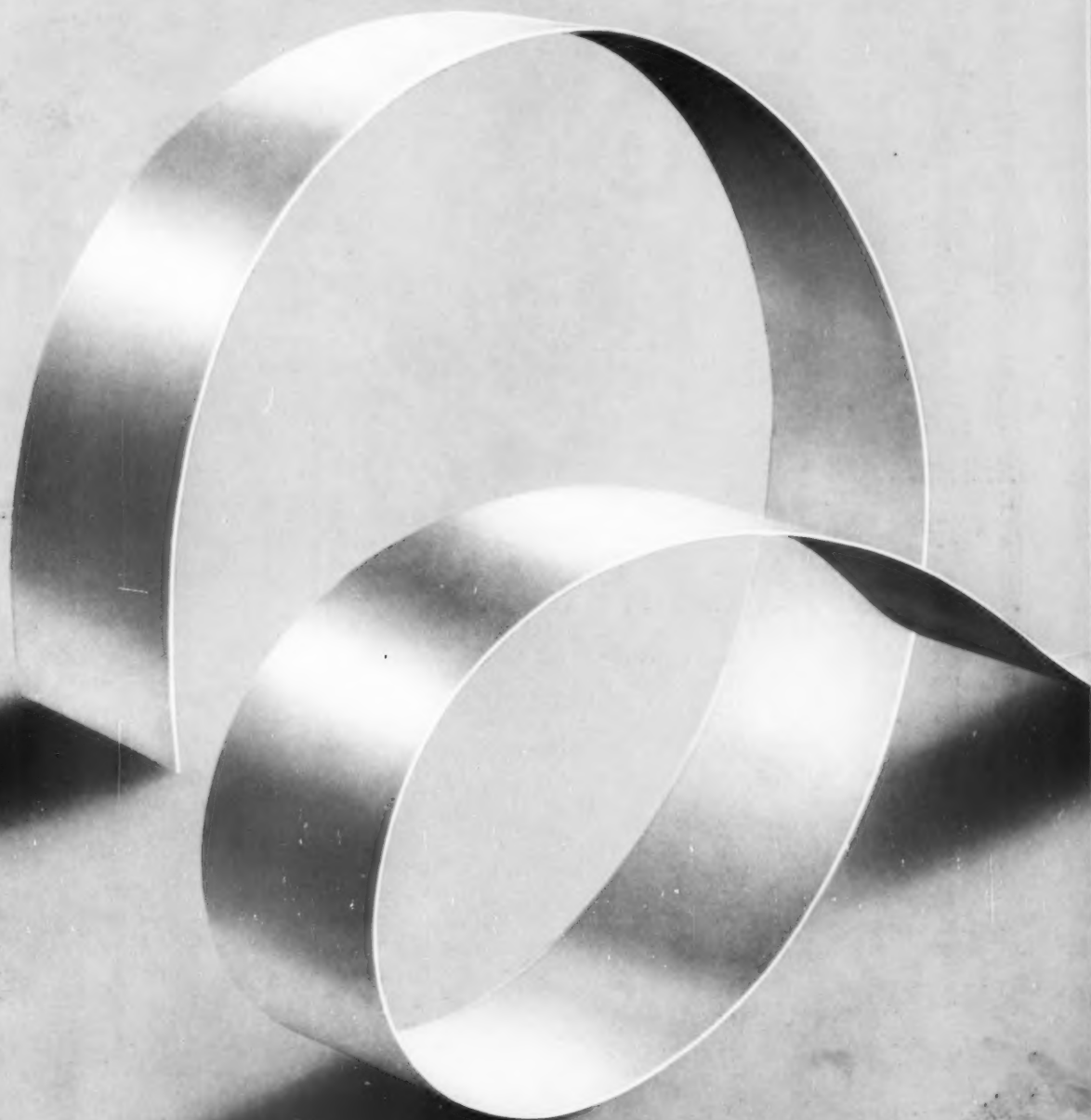
PURCHASING

stainless strip — that reflects your specifications

Call Crucible to fulfill strict specifications for lustrous finish, uniform quality and gauge in stainless strip. For Crucible produces finishes of incomparable lustre by precision-rolling each coil on modern mills. Exact quality and gauge are con-

sistently ensured because Crucible methodically checks each heat, measures gauges continuously with electronic controls. So why settle for less than strip that reflects your high standards? Call

Crucible—a leading producer of stainless in gauges to .010" and in all widths. Or write: *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



CRUCIBLE

STEEL COMPANY OF AMERICA

Canadian Distributor—Railway and Power Engineering Corp., Ltd.

Is Your Production RIGHT ON THE BUTTON



Are your profits being plucked by short runs or over-runs? You can put everything under *Control* — and keep it that way — with Veeder-Root Counters on your machines and processes. For then you can see at a glance exactly where production stands at any given moment.

Veeder-Root makes all types of electrical, mechanical and manual counters . . . including remote indicating units that can be panel-mounted right in your office . . . and predetermining counters that *Control* machine-runs. So whatever you need to count, you can count on Veeder-Root to figure the best way to do it.

You always "Know the score" when you count on Veeder-Root!



NEW "VISICOUNTER"

Gives greater figure-visibility with dome-shaped window. Better suited for panel-mounting. This rugged, heavy duty counter comes in both ratchet and geared types, non-overthrow wheels. 1-piece case.

Everyone can Count on



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DC



DISCOVER A World of Difference IN SHIPPING SERVICE

Yes, when you try D-C, you open the door to a whole new world of shipping convenience. You benefit from . . .

- Exclusive, one-carrier DIRECT service from coast-to-coast.
- Fast, 2-man sleeper cab service that goes straight through, with no transloading. Saves up to 20% in running time.
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- Dependability resulting from consistently careful, swift handling of your shipments.

Discover this NEW WORLD of shipping service for yourself. Mark your next shipment and your next order "D-C."

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ONE
STEP
ACROSS
THE
NATION



DENVER CHICAGO TRUCKING CO., INC.
THE ONLY COAST-TO-COAST CARRIER



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Cleveland, Ohio . . . SH 9-1666	IN Bergen, N. J. . . . UN 3-0900
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Denver, Colorado . . . DU 8-4567	Phoenix, Arizona . . . AL 6-5321
Detroit, Michigan . . . VI 3-9505	Pueblo, Colorado . . . LI 3-4425
Evansville, Indiana . . . HA 3-6487	St. Louis, Missouri . . . CH 1-7830
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¹DC operators of Eck Miller—Terminal Cities

OFF-LINE SALES OFFICES:

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Boston	*Milwaukee	San Francisco
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*With Trailer Pool

**Trailer Pool Only

For the Precision
of a Count-down



T-J LAUNCHES A NEW **CUTTING TOOL LINE** FOR MILLING ACCURACY

For precision milling to close tolerances, so vital in today's high-speed, high-production manufacturing, T-J now offers a new, improved line of milling cutters. The new cutter line features a high helix angle, double back-off, and a right-hand spiral to produce more and smoother cuts between grinds, and a free-cutting, stronger tool.

Specially designed and precision-manufactured for die sinking and production milling, the new line is designed to include flats on the shanks for set screw type drivers on all of the end and side milling cutters. Write today for complete information to the Tomkins-Johnson Company, Jackson, Mich.

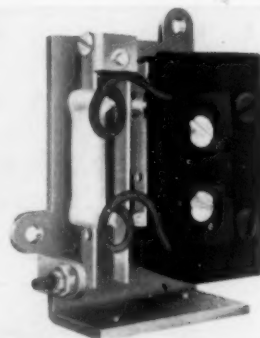
Ask for completely new cutter catalogue No. 259.



For More Information Write No. 228 on Inquiry Card—Page 32

Products

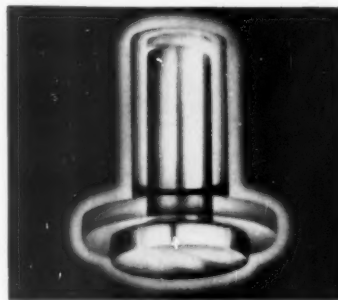
Miniature 20 Amp Thermal Time Delay Has Snap Action Contacts



Thermal Time Delay Timer, designated series TH, fills the need for a reliable, fixed, time delay, switching up to 20 amperes. Features include: Snap action load contacts; many contact arrangements available; contact rating up to 20 amperes, 10 amperes standard; automatic ambient temperature compensation; and rugged cast ceramic heater, no fragile heater wire. Industrial Timer Corp. 1407 McCarter Highway, Newark 4, N. J.

Write No. 34 on Inquiry Card—Page 32

Insulated Rivets



New series of plastic insulated metal rivets provides many new sizes previously unavailable. In addition, it permits new lower prices in production quantities. Rivets are fasteners consisting of metal rivets (aluminum, brass, steel or the like) where shank and under-the-head surfaces are covered with a uniformly thick plastic insulation. The plastic in-

(Please turn to page 130)

Spicer Drive Lines Get Specified For The Toughest Jobs

This self-propelled oil field vehicle is designed for top dependability in some of the roughest, toughest work you'll find. Loads are heavy, often excessive. Dirt and grit are always present, and the equipment must be ready for prolonged and uninterrupted service any time of the night or day.

Under these conditions . . . where highest quality, dependability and durability mean everything . . . you'll usually find Spicer transmissions, clutches, universal joints, PTO's, and drive lines. Take a good look the next time you're admiring a hardworking piece of equipment. You'll probably find the name Spicer on the critical power train components.

The vehicle shown is one of a type manufactured by Fred E. Cooper, Inc., of Tulsa, Oklahoma, employing Spicer Series 1700 heavy-duty drive shafts. Cooper also builds a line of skid units using dependable Spicer transmissions.



DANA CORPORATION

• Toledo 1, Ohio

DANA PRODUCTS Serve Many Fields:

AUTOMOTIVE: Transmissions, Universal Joints, Propeller Shafts, Axles, Power-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.

INDUSTRIAL VEHICLES AND EQUIPMENT: Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.

AVIATION: Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.

Many of these products manufactured in Canada by Hayes Steel Products Limited, Merrifiton, Ontario.

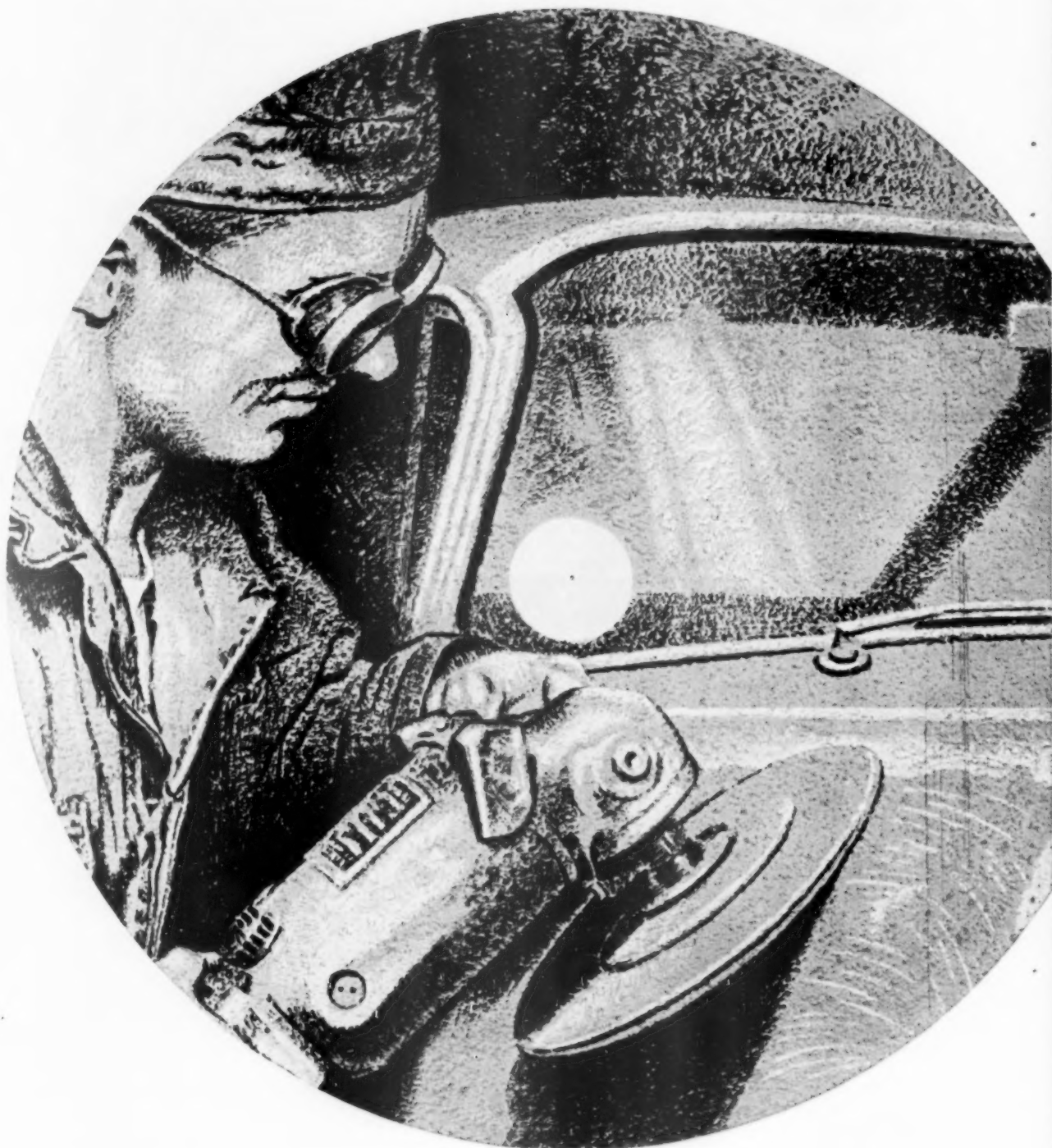
RAILROAD: Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.

AGRICULTURE: Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take-Off Joints, Clutches, Forgings, Stampings.

MARINE: Universal Joints, Propeller Shafts, Gear Boxes, Forgings, Stampings.



It takes a lot of Grit



to keep industry growing

A different kind of disc jockey—

This man may not know about "cutting a record"—but he cuts tons of metal, making a multitude of products needed for our daily living.

From smoothing auto bodies to grinding off welds from sinks, portable disc sanding is one of the most important steps in manufacturing.

The precise combination of abrasive grit, anchored by the right adhesive to the sturdy backing, speeds production and cuts costs—to give us better products for less.

Behr-Manning is a leading supplier of coated abrasives for countless industries. Their leadership is the result of one of the most advanced abra-

sive research laboratories and manufacturing facilities in the world.

For better products and better production methods, Behr-Manning has engineered over 61 important new products and more than 302 major product developments...such as LIGHTNING* (electro-coating), GARNET Paper, DURABONDED* Adhesive Treatment, OPENKOTE* Sandpapers, TUFBAK* Paper for wet sanding, and No-FIL* Paper for dry sanding.

In one year, Behr-Manning makes more than 180,000,000 sheets of sandpaper and over 20,000,000 abrasive belts—plus millions of discs, rolls, and other coated abrasive specialties.

*Registered U.S. Patent Office

The sign of the Bear means a better product . . . and better production



BEHR-MANNING CO.

TROY, NEW YORK—A DIVISION OF NORTON COMPANY

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electrochemicals
In Canada: Behr-Manning (Canada) Ltd., Brantford For Export: Norton Behr-Manning Overseas Inc., Troy, N. Y., U.S.A.



MARCH 16, 1959

For More Information Write No. 230 on Inquiry Card—Page 32

129



Cut costs, speed work with B&D accessories



B&D Drill Stands convert your portable Black & Decker Drill into a drill press for heavy-duty work. Available in all sizes.



Rugged Wire Brushes remove scale and rust, old paint; clean castings and structural metal when attached to your B&D Drill. Available in cup and wheel types.



High-Speed Hole Saw cuts clean, round holes powered by your B&D Drill. Other accessories

stocked by your B&D distributor include mandrels, right angle attachments, bits, arbors, specialized chucks. Call him today.

INSIST ON THE BEST

Black & Decker

ACCESSORIES DESIGNED FOR THE TOOL

Products

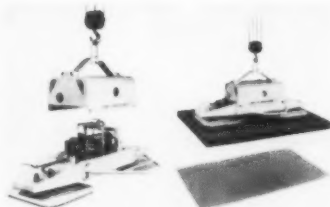
(Continued from page 126)

sulation, consisting of nylon, extends slightly beyond the metal rivet's head circumference and also beyond the end of the metal rivet.

Used in electrical or electronic applications where it is necessary to fasten two or more metal parts and yet not have the parts connected electrically. Other applications include riveting to ceramic or glass where the nylon sheath acts as a shock absorber to prevent cracking. Pylon Co., Inc., Attleboro, Mass.

Write No. 35 on Inquiry Card—Page 32

Square Cup Vacuum Lifter



Square Cup Vacuum Lifters lift and moves steel and non-ferrous plates. Unit shown has two 20-inch square vacuum cups, each with 400 square inches of lifting surface. At 10 pounds per square inch, each cup has 4,000 pounds of lifting power; with a 4 to 1 safety factor the lifting capacity is still 1,000 pounds. These square cups are adapted to one cup, two cup, four cup and eight cup Vac-U-Mation units. Unit is capable of handling rugged jobs. Since the vacuum pump maintains a constant reserve of vacuum in the tank, even an electrical failure will not permit the load to drop for a reasonable length of time, depending upon the condition of the material. Other models are available for handling light and heavy loads up to five tons. Vac-U-Mation Division, F. J. Littell Machine Company, Dept. 2-T, 4127 N. Ravenswood Avenue, Chicago 13, Illinois.

Write No. 36 on Inquiry Card—Page 32

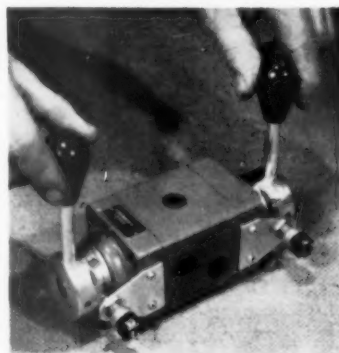
Accurate Dimension Transfer



Hite-Cheks eliminate chatter and other vibration in the transfer of dimensions. Utilizing a new lightweight, aluminum, tapered-box construction, uprights provide rigidity and stability in supporting any dial test indicator, in any position. Sturdy bases with hardened and lapped graphitic steel wear pads provide smooth, easy movement. Two-piece sliding heads permit quick rough settings, while positive fine adjustments can be securely clamped. Units are particularly suitable for use with high-amplification indicators. Three standard sizes are available: 24, 36, and 48 inches high. Industrial Products Division, Brown & Sharpe Manufacturing Company, Providence 1, Rhode Island.

Write No. 37 on Inquiry Card—Page 32

Double Hydraulic Valve



Double hydraulic valve is available in three-way and four-way

(Please turn to page 132)

For More Information Write No. 231 on Inquiry Card—Page 32→



Job hard-to-reach, hard-to-handle? Send for a B&D Magnetic Drill Press!



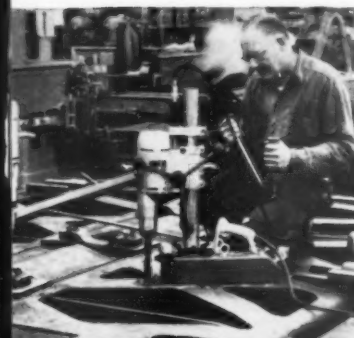
B&D 1 1/4" MAGNETIC DRILL PRESS works high overhead upside down; enables maintenance man to get into tight spots easily, rapidly.



TAKE 'EM ANYWHERE you need a drill press. Both are light weight, easily transported, simple to put to work; move to the next job.

B&D 1 1/4" MAGNETIC DRILL PRESS works upright on huge Air Chuck drilling and tapping; ready for instant moving to next operation.

B&D CADDY CART is the perfect way to transport your Magnetic Drill Press from job to job. Prevents damage to this peak precision tool.



Save hours . . . even days on every job . . . one use may pay for the tool!

Whether your job is production, construction or maintenance, a Black & Decker Magnetic Drill Press sticks like glue to the job. Lets you stand off and guide the bit from a distance. And it takes just finger-pressure to drill even a 1 1/4" hole with Black & Decker's exclusive Hydra-power Feed.

See one on your work. Two sizes to choose from: 3/4" and 1 1/4"; both complete precision units—not attachments. Perfect for drilling, reaming, tapping in tool shops, steel fabricating, maintenance—anywhere you need a drill press but can't take the work to the tool.



Black & Decker®
Quality Electric Tools . . . Power-built for top performance

THE BLACK & DECKER MFG. CO.
Dept. 1703, Towson 4, Maryland

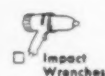
- ☐ Please arrange a demonstration of your ☐ 1 1/4"; ☐ 3/4" Magnetic Drill Press
- ☐ Send me additional information
- ☐ Send me information on the tools checked below.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....





PERFECTION worm gear SPEED REDUCERS

available in ratios of
5 to 1 to 60 to 1

Perfection Worm Gear Speed Reducers by American Stock Gear are available in 9 complete series with ratios ranging from 5 to 1 to 60 to 1 for input revolutions ranging from 300 per minute to 1800 per minute. Speed Reducers are furnished in horizontal right angle drive with worm in either top or bottom position and are also furnished in vertical right angle drive. Integral worm and shaft is made of selected quality, case hardened alloy steel. Threads are precision ground and accurately mated with worm gear. Shafts are mounted in Timken anti-friction roller bearings. Heavy rigid cast-iron housings . . . easily accessible oil filling level and drain plugs are provided for oil reservoir. Oil seals are of selected cirvis leather which assures maximum sealing effect. Available through your nearest American Stock Gear Distributor.

Write for new 16 page catalog covering
the complete PERFECTION Speed Reducer line.

AMERICAN STOCK GEAR DIVISION
PERFECTION GEAR COMPANY • HARVEY, ILLINOIS, U.S.A.

For More Information Write No. 232 on Inquiry Card—Page 32

Products

(Continued from page 130)

combinations. Sizes range from 2GPM to 40 GPM with detented or spring return handles. CEM-LAP seals mating with optically flat rotor surfaces assure positive sealing at 2500 psi. pressure for oil and 2000 psi. for water and gas. The roller thrust bearings assure smooth action and low handle pressures. Motor starting switches can be added as shown for AC or DC operation. The pump then runs only when the handle is turned. Suitable for use in fork lifts and other materials handling equipment, in loaders, dozers, and other road machinery and in machine tool applications. Clark Engineering & Manufacturing Co. of Racine, Wisconsin.

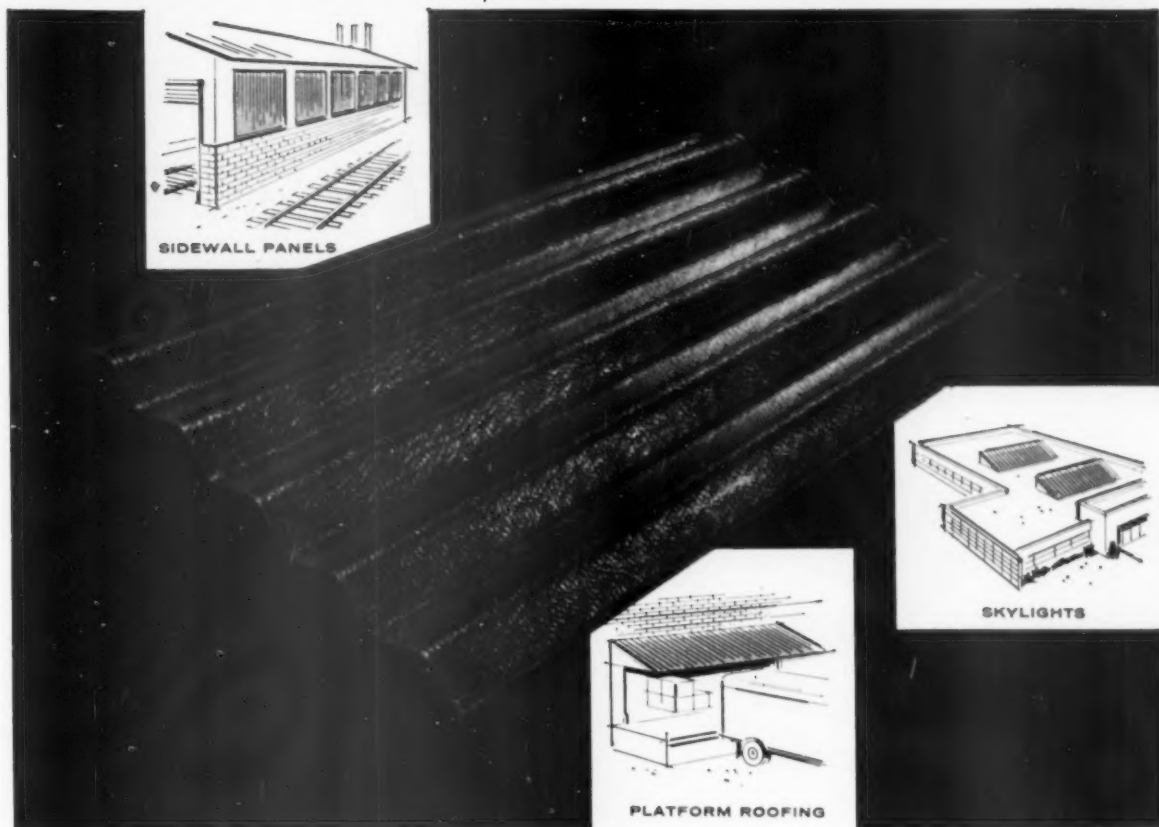
Write No. 38 on Inquiry Card—Page 32

Water Cooler Conceals All Plumbing



Water cooler can be installed flush against a wall by concealing plumbing inside. "Wall Line" coolers are slimmer in depth than other models and require 26 per cent less floor space. A high back splasher protects the wall and insulation of all cold surfaces, prevents dripping of condensed moisture from cooler. Model W7D has a capacity of seven gallons per hour and will serve 84 office or 49 industrial employees on the average. Westinghouse Electric Corp., Pittsburgh, Penn.

Write No. 39 on Inquiry Card—Page 32
PURCHASING



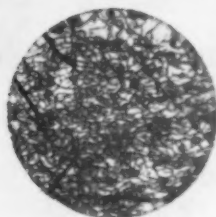
What makes this panel resist weathering?

Other glass-fiber reinforced panels may look like this when new . . . but how about three years later? The answer is in the photomicrographs below. After 36 months of continuous outdoor exposure in Florida, the panel made with acrylic-modified PARAPLEX P-444 polyester resin shows virtually no discoloration or fiber evidence. However, the panel made with conventional

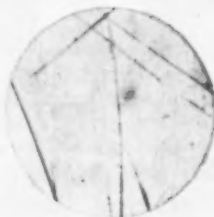
light-stabilized resin shows pronounced degradation.

Take advantage of the colorful and attractive appearance, high strength, good light transmission and easy installation of reinforced plastic panels in many locations around your plant. And when you do...insist on the weather-resistance of panels made with PARAPLEX P-444. Write for names of panel manufacturers.

36-MONTH FLORIDA EXPOSURE TEST



Conventional light-stabilized resin



PARAPLEX P-444



Chemicals for Industry
**ROHM & HAAS
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

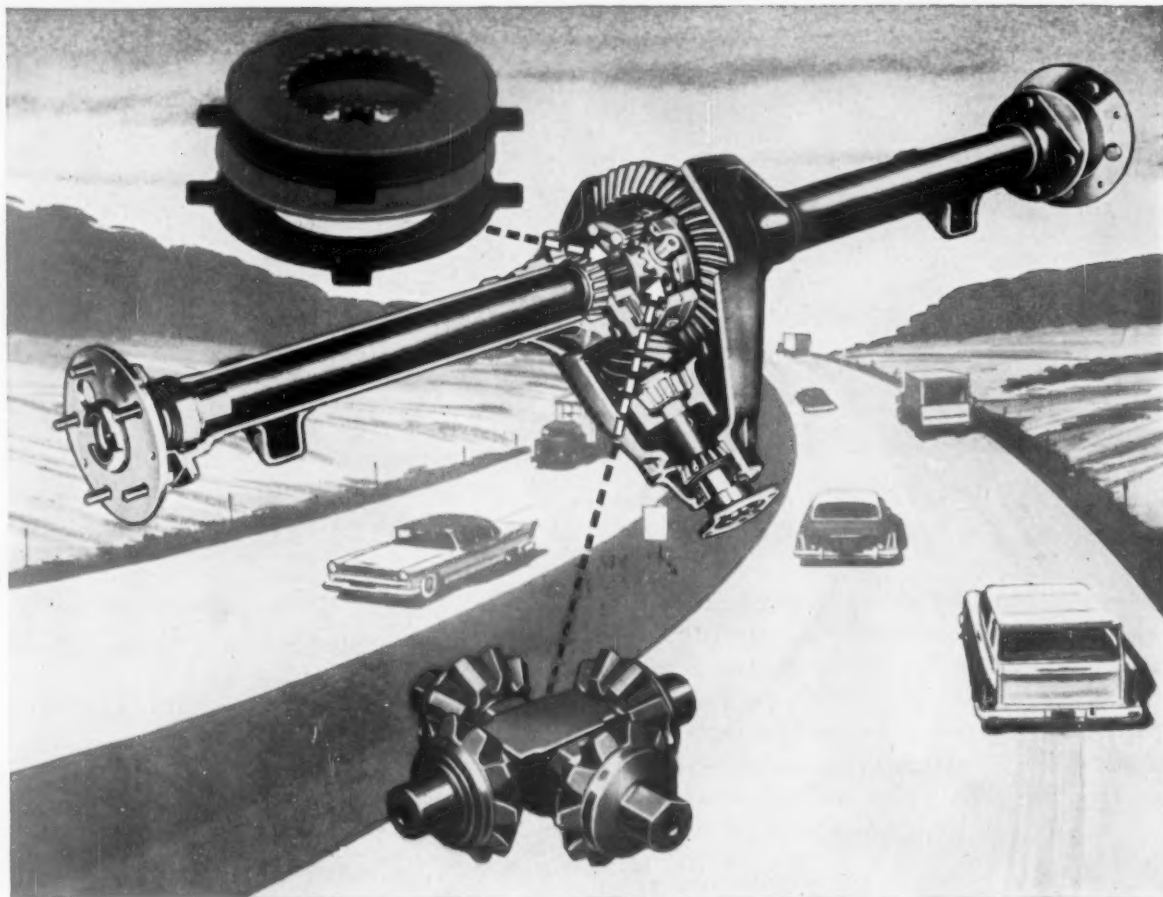
Representatives in principal foreign countries

PARAPLEX is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

PARAPLEX P-444

Problem-Solving Products from Republic

PROVIDE SUPER TOUGHNESS AND STRENGTH AT CRITICAL POINTS IN AUTOMOTIVE DIFFERENTIALS



Modern passenger cars with increasing horsepower present problems in high speed stability and handling. The Powr-Lok differential, developed by the Dana Corporation, Toledo, Ohio, permits an automotive axle to transmit the greatest driving force to the rear wheel having the better traction.

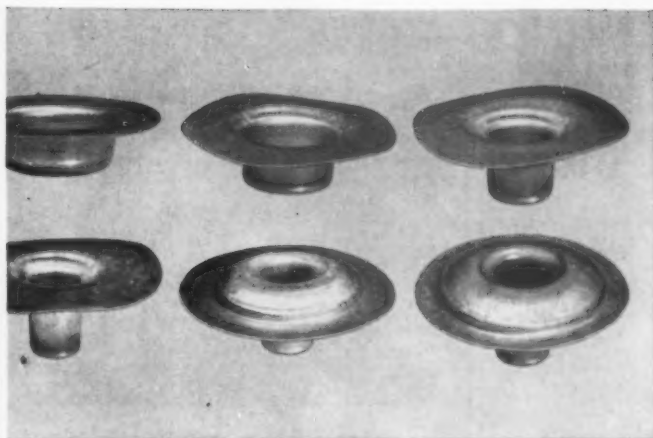
Essential to the economical and dependable operation of these differentials are Republic Alloy Steels. Why? Because only alloy steels have the high strength, toughness, shock-resistance, and abrasion-resistance needed to withstand the severe service to which differential clutch rings and side gears are subjected.

By specifying Republic Hot Rolled 8615 Alloy Bars, Dana engineers have reduced the possibility of a mechanical breakdown to an absolute minimum.

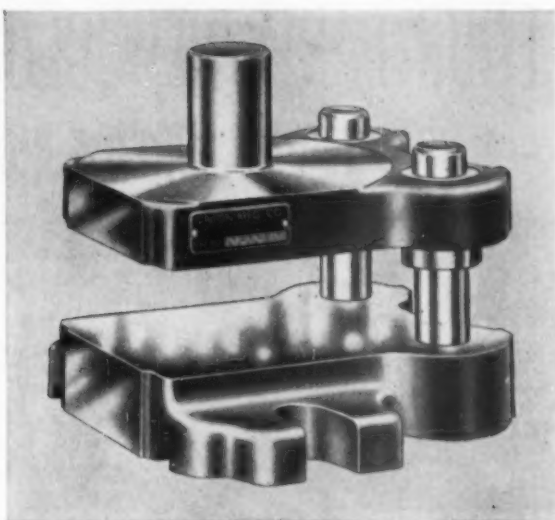
These fine steels offer superior toughness and strength to withstand torque, fatigue, shock, and stress. Alloy steel's uniform response to heat treatment gives these rings and gears hard surfaces around tough cores providing maximum resistance to abrasion, friction, and wear.

In Republic Alloy Steels you will find highest strength values—plus an exceptionally high strength-to-weight ratio that permits the designing of thinner sections to save weight and hold down size without any sacrifice of needed strength.

Republic's 3-Phase Metallurgical Service—field, mill, and laboratory—is always available to help you apply these quality alloy steels to your product. It's confidential. There's no obligation. Send coupon for more information.



HERE ARE SIX STEPS of possibly the severest manufacturing torture that a galvanized steel sheet can take. In its final form, it becomes the end piece of a muffler manufactured by the Mackenzie Muffler Company, Inc., Youngstown, Ohio. It is made out of Republic Continuous Galvanized Sheets. Despite the many deep drawing operations, the coating does not crack, flake, or peel. Republic Galvanized Sheets can do a profitable job for you. Clip the coupon and mail it in for more information.



REPUBLIC CHATEAUGAY PIG IRON meets demands for both strength and accurate machining in die sets manufactured by the Union Manufacturing Company, New Britain, Connecticut. As a result, Union has standardized on Chateaugay, low phosphorus, copper-free pig iron for maximum strength, flaw-free, easy-to-machine castings. Other superior characteristics of Chateaugay include its exceptional fluidity, even cooling, and fine dense grain structure. For complete information mail coupon.



REPUBLIC'S NEW HIGH STRENGTH POWDER, TYPE H.S. 6460, opens the way to new markets for new applications using sinterings for highly stressed parts. Type H.S. 6460 can be used with existing operating equipment. It provides a minimum tensile strength of 60,000 psi at 6.4 density as sintered, and 100,000 psi heat treated. Type H.S. 6460 maintains its dimensional characteristics after sintering—less than .004 inches per inch shrinkage from die size at 6.4 density. Available in production quantities up to and including 12 tons, or in multiples thereof. Mail coupon for technical data sheet on Type H.S. 6460 Powder.

REPUBLIC STEEL



*World's Widest Range
of Standard Steels and
Steel Products*

REPUBLIC STEEL CORPORATION

DEPT. PH-6440-A

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Have a metallurgist call.

- | | |
|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Alloy Steel | <input type="checkbox"/> Pig Iron |
| <input type="checkbox"/> Metal Powder | <input type="checkbox"/> Steel Sheets |

Send more information on these Republic products:

- | | |
|--|---|
| <input type="checkbox"/> Alloy Steel | <input type="checkbox"/> Pig Iron |
| <input type="checkbox"/> Type H.S. 6460 Powder | <input type="checkbox"/> Continuous Galvanized Sheets |

Name _____ Title _____

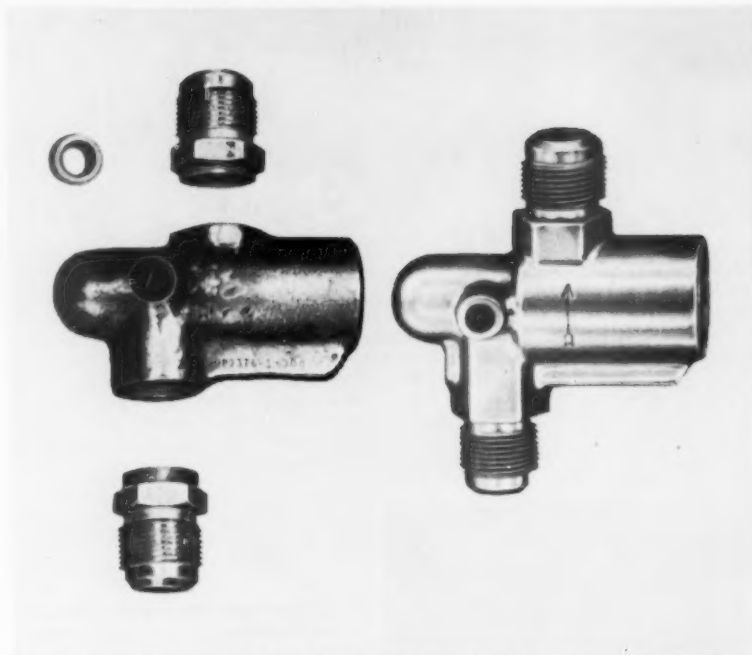
Company _____

Address _____

City _____ Zone _____ State _____

FOUR PARTS REDUCED TO ONE

—A BRIDGEPORT CORED FORGING STORY



The one-stroke Bridgeport cored forging on the right replaced the four-part casting assembly on the left.

The purpose of these valves is to control liquid under pressure. The four-part assembly shown on the right did not operate to fullest efficiency. Leakage frequently was present because of the porosity in the part's cast element.

The Engineering Staff at Bridgeport's Cored Forging Division designed the economical one-piece cored forging pictured on the right to abolish — once and for all — the leakage problem as well as many of the production steps.

The control valve is now all one unit. Assembly time has been eliminated and inspection time and part porosity are things of the past. Good, positive chucking for threading operations has reduced machining

time to the necessary minimum. This simple, yet significant achievement, is an example of what Bridgeport's forging processes, both die and cored, can do for your component or part. Learn more about Bridgeport's forging facilities.



Write to Dept. 9001 for your copy of our detailed 16-page brochure, "Bridgeport Forgings."



CORED FORGING DIVISION **BRIDGEPORT BRASS COMPANY**

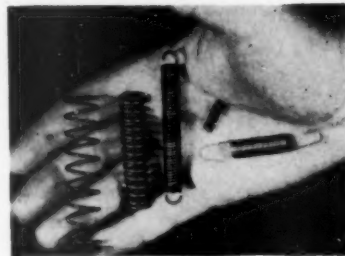
1000 Connecticut Ave., So. Norwalk, Conn.

Specialists in Metals from Aluminum to Zirconium

For More Information Write No. 235 on Inquiry Card—Page 32

Products

Superalloy Spring Wire Operates to 1000°F



Superalloy spring wire made of Inconel X for aircraft, missiles, electronics, automotive and other high-temperature components that operate between 650 and 1000° F. The wire is heat-treatable nickel-chromium, iron, titanium material that can be precipitation hardened. Available annealed from 0.005 to 0.166-inch diameter, in spring temper from 0.005 to 0.180-inch diameter, and in No. 1 temper from 0.005 to 0.230-inch diameter.

Spring temper is recommended for operating temperatures from 650 to 750° F. Corresponding tensiles range from 190,000 to 270,000 psi, depending on wire diameter. No. 1 temper is recommended for operating temperatures from 650 to 1000° F. Corresponding tensiles range from 130,000 to 165,000 psi, depending on wire diameter.

Finishes include copper, lead, cowles lime, lime-oil and bright. Prices range from \$6 to \$16 per pound. National-Standard Co., Niles, Mich.

Write No. 40 on Inquiry Card—Page 32



"It's nothing personal, you understand. By Friday I can't stand the sight of ANY salesman".



Bridgeport Ultra Fine Grain Brass Strip Saves Siesta-Ware \$2,400 a Year



Colorful Siesta-Ware is designed to create a holiday mood...and so are the remarkable production savings realized by Benner Glass Company!

Before Benner Glass Company, Jacksonville, Fla., made the happy discovery of Bridgeport Ultra Fine Grain Brass Strip, production of the brass banding on each attractive Siesta-Ware Party Mug, Snack Jar and Tumbler was at the rate of two coils of strip running at 35 lineal fpm through three buffing stages. Today, with Bridgeport UFG Strip, the same machine runs at the rate of 48 fpm!

There's a simple reason why Benner Glass now realizes 23% time savings and 8% savings on polishing materials. It is this: the infinitely superior finish of Bridgeport Ultra Fine Grain Strip requires far less buffing. Important savings in time, cutting compound and buffing naturally result. In the annual processing of Bridgeport coiled strip, Benner saves more than \$2,400...while turning out an even better finished product!

Don't you overlook the sizable savings that can be yours when you switch to Bridgeport Ultra Fine Grain Brass Strip. To get the facts and figures as they apply to your products, call your nearby Bridgeport Sales Office...or write direct for a copy of our Ultra Fine Grain Brass Booklet, GRAIN SIZE, THE FOURTH DIMENSION. Dept. 3704



BRIDGEPORT BRASS COMPANY

BRIDGEPORT 2, CONNECTICUT

Specialists in Metals from Aluminum to Zirconium

How to save money in



THE JET AGE IS HERE. Air-speed has doubled. This means new markets for you, lower inventory, more sources of supply, if you take full advantage of air freight.

All the more reason why you should know about exclusive Emery Air Procurement Service. It's already being used profitably by America's leading corporations. Any company of any size can use it.

Emery Air Procurement Service picks up your inbound shipment anywhere in the United States and delivers it right to your door, day or night, in the fastest possible

time. A phone call to Emery starts your shipment on its way. And Emery's nationwide teletype system keeps you informed of where your shipment is en route and exactly when it will arrive.

And you get all this for the cost of transportation alone.

Let our representative tell you how Emery Air Procurement Service can fit into your purchasing program—at a real saving to you. There is no obligation on your part. Just mail this coupon today. Or call us. We have offices in all major cities.

*It will
pay you to
see and hear
this 10-minute
story...*

your purchasing program with jet-age air freight!



CHECK THESE EMERY RATES* ...AND SEE WHAT YOU SAVE!

	2500 Mi.		1700 Mi.		700 Mi.	
	Emery	Air Express	Emery	Air Express	Emery	Air Express
50 lb.	\$23.54	\$39.70	\$19.38	\$28.50	\$13.27	\$12.50
100 lb.	38.90	77.40	31.20	55.00	19.10	23.00
200 lb.	69.00	154.80	53.00	110.00	29.80	46.00

*Apply to most commodities between most major cities.



EMERY AIR FREIGHT CORPORATION

801 Second Avenue, New York 17, N. Y.

Gentlemen:

I would like to hear about Emery Air Procurement Service. Please have your representative call on me.

Name

Company

Street

City State

Huge H&S Gears

drive world's largest bending machine

Horsburgh & Scott is proud to have supplied the spur gears that drive this machine—designed and built by Bertsch & Co., Cambridge City, Indiana. Largest of its kind, it bends cold steel plates up to 4¼ inches thick, 16 feet long; weighs over ¾ of a million pounds.

Horsburgh & Scott has facilities to generate gears up to 125" diameter and to form-mill spur gears up to 160". We have a complete industrial gear line including worm, helical and herringbone speed reducers.

Tell us your needs. We'll be glad to help you select the proper gearing for you.



2100-ton pressure shapes hull plates for atomic-powered submarines

H & S bronze worm gears adjust forming rolls



Send for your free copy of H & S Gear Catalog No. 57.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 Hamilton Avenue • Cleveland 14, Ohio

For More Information Write No. 238 on Inquiry Card—Page 32

Products

Automatic Creep Strain Test Monitor



Engineers at The Martin Company's Baltimore materials engineering laboratory obtain extremely accurate records of microscope creep-strain tests with a 16 mm camera set-up that records the progress of the tests at elevated temperatures. Furnace (upper right) is swung aside to disclose test specimen, to which a small, scribed slide rule type platinum gage has been clamped. Specimen and gage are magnified by a microscope. Image passes to both camera and optical viewer via a reflex. Time, stress, and temperature information are fed into the film record by an imposition device. Solenoid-timer (lower right) can be set for readings at any interval between 64 frames per second and 1 frame every ten hours. A battery of cameras, linked to a single timer, is used to make synchronized records of several types of data. Martin Company, Baltimore, Md.

Write No. 41 on Inquiry Card—Page 32



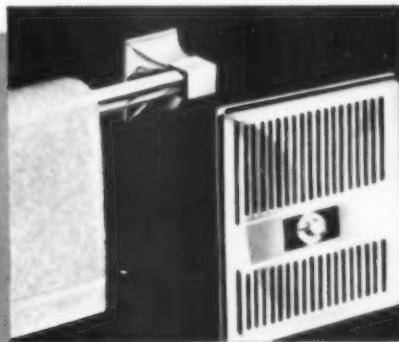
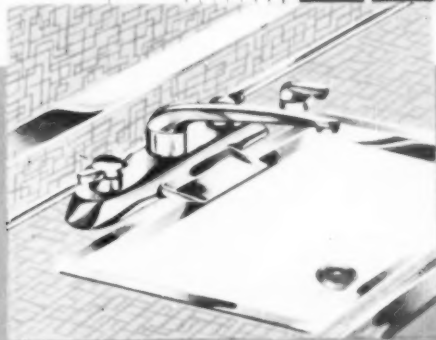
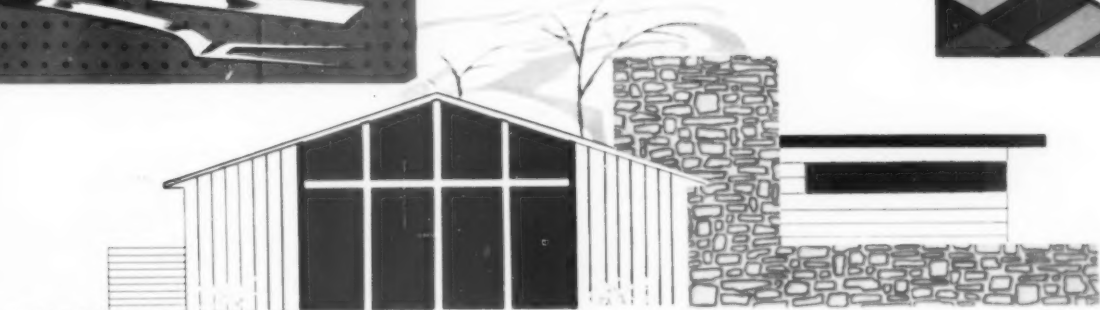
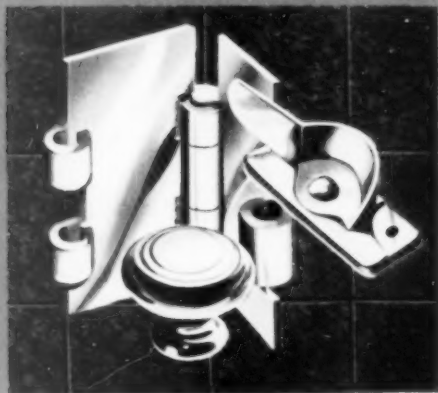
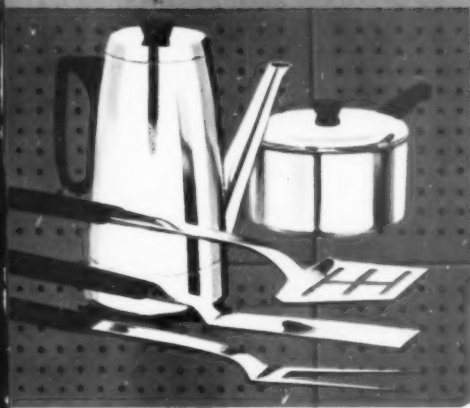
"For the last time, Frimly, do we or do we not get delivery by the 15?"

For More Information Write No. 239 on Inquiry Card—Page 32→

PURCHASING

Fine to have around the house

for every stainless reason!



Superior

STAINLESS STRIP STEEL

At every turn, stainless serves in the modern home . . . brightens the decor, lightens every cleaning chore! From Superior Stainless Strip Steel, precise in specification for each specified need, are made scores of tarnish-proof, wear-resisting, care-banishing home products. ● Let us discuss our steels and your fabrication possibilities, without obligation of any kind.

Superior Steel Division

OF

COPPERWELD STEEL COMPANY
CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York

Office Equipment and Supplies



It is now possible for every meeting room, classroom or office to accommodate movies, slides, filmstrips, using minimum wall-space and with no special light controls. This comes about as a result of the introduction of a new roll-up wall screen by **Radiant Manufacturing Corp.**, P.O. Box 5640, Chicago 80, Illinois. The new screen represents a unique combination of the convenience and flexibility of a roll-up wall screen with a lenticular surface which gives 100° viewing in both darkened and in normally lighted rooms. It becomes flat as the wall

by clicking the "Stretch-Bar" into a special lock bracket behind the screen. The screen is available in two sizes: 40 x 40 inches and 50 x 50 inches. The screen is also washable, fungusproof and flame-proof.

Write No. 42 on Inquiry Card—Page 32



Introduction of a new two-in-one ball pen has been announced by the **American Stencil Mfg. Co.**, 2714 Walnut St., Denver 5, Colorado. One end writes in red, the other in blue or black. All writing points are extra-fine, barrels in two colors to match the inks. Each pen comes equipped with a pocket clip and two protective caps.

Write No. 43 on Inquiry Card—Page 32



A new type portable detacher was recently announced by **Moore Business Forms, Inc.**, Niagara Falls, New York. Called the Speeditacher, it has been designed for small offices having: small quantities of continuous forms to be detached, varying sizes of forms, and as a supplement during peak periods. It will accommodate forms from 3" up to 11" in depth and up to 16½" wide. Special sound-deadening materials have been incorporated to reduce operating noises.

Write No. 44 on Inquiry Card—Page 32

Photos courtesy of "Office Appliances"



VALUE ANALYSIS was the theme of the first live closed-circuit TV show ever presented in the pencil industry recently. Over 5,000 purchasing agents and dealers in 12 cities across the United States and Canada saw the show, which originated in the Danbury, Conn. plant of Eagle Pencil Company, Inc. In photo at left, Eagle's Vice President and Director of Marketing David E. Price (l.) and Director of Sales Education Carl Schutz discuss pencil performance before moving to company laboratories for a series of quality tests. Purchasing Magazine Editor Paul Farrell, right, explained value analysis at the beginning of the show.

NEW for forms-handling economy



Compact, portable for 'on-the-spot' use

MOORE SPEEDITACHER

Economical operation makes SPEEDITACHER ideal for offices with 'small quantity' detaching jobs—where there are varying sizes of forms to be detached—where peak loads require supplementing heavy-duty equipment.

It's streamlined—it's compact—it's portable so that you can take SPEEDITACHER right to each form-detaching job location. Put it on a table—on a desk—plug SPEEDITACHER in and it's ready to go to work for you! Loading is as simple as putting a form in a typewriter.

Build control with

MOORE BUSINESS FORMS

MARCH 16, 1959

For More Information Write No. 240 on Inquiry Card—Page 32

Finger-tip controls for different form sizes are set in seconds! A simple twist of the control wheel and you are ready to detach. Read the whole story in our booklet—for a copy call the Moore man or write the Moore office nearest you.



MOORE BUSINESS FORMS, INC., Niagara Falls, N. Y., Denton, Texas; Emeryville, Calif. Over 300 offices and factories across U.S., Canada, Mexico, Cuba, Caribbean, Central America.



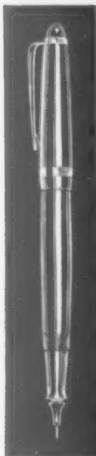
KOH-I-NOOR

Precision-Matched Instruments



ADAPTO-CLUTCH LEAD HOLDER and EJECTOMATIC LEAD DISPENSER

Two Koh-I-Noor products designed to work together for greater convenience. Lead holder's non-slip clutch takes all 17 degrees of Koh-I-Noor lead. Ejectomatic Dispenser feeds lead to holder without need to touch it.



RAPIDOGRAPH NON-CLOGGING "TECHNICAL" FOUNTAIN PEN

A smoothly performing ruling, lettering and tracing pen that uses India or regular ink with equal facility. A tremendously convenient, time-saving, reliable instrument. Fully guaranteed. In five precision line widths:



Write for descriptive literature.

by **KOH-I-NOOR**
of course
Bloomsbury 4, New Jersey

For More Information Write No. 249 on Inquiry Card—Page 32

Office Equipment



A new development in typewriters is the "Chart-Typer." It enables any typist to type the most complex chart material. The keyboard has a normal upper case alphabet and figures. Instead of lower case letters the machine has 27 different chart symbols. An attachment permits the typing of charts on any kind of chart paper. With a carbon ribbon attachment, the material typed on this machine is ready for offset printing production. Made in West Germany, the typewriter is distributed by **Continental Office Machines, Inc.**, 500 Fifth Avenue, New York 36, New York.

Write No. 45 on Inquiry Card—Page 32



A new telephone shoulder rest is designed to allow the user to talk as freely as he would over a microphone. A product of the **Ray-Dex Products**, 1830 South Robertson Blvd., Los Angeles 35, Calif., it holds the receiver right up to speaking level. A patented Dupont Neoprene air-sling fits itself to the user's shoulder contours.

Write No. 46 on Inquiry Card—Page 32

A free booklet is available from **The Carter's Ink Company**, Cambridge, Mass. Entitled, "How To Be An Expert on Carbons And Ribbons," the booklet is a five-minute course on how to choose exactly the right typewriter carbon and ribbon for every specific typing job.

Write No. 47 on Inquiry Card—Page 32



To help the modern purchasing agent, so engrossed with figurework, **Marchant Calculators**, 6701 San Pablo Avenue, Oakland 8, Calif. has introduced a new "Transflo" model calculator. It is fully automatic and all-electric. Its operation makes possible duplex and triplex calculations, multi-factor multiplication, and any number and combination of consecutive calculations. With back transfer as a focal feature, the machine transfers, stores and recalls products, individual totals, individual subtotals, accumulated grand totals, and the intermediate results in any problem.

Write No. 48 on Inquiry Card—Page 32

An automation bibliography is now available. It contains more than 175 references to books, booklets, magazine articles, pamphlets and films. All items are listed alphabetically by title, together with such other pertinent information as author, publisher, issue, etc. To complement the bibliography is a 38-page "Glossary of Automation Terms" containing definitions of words and phrases commonly associated with electronic computer terminology. Both of these publications can be secured from the headquarters office of the **National Office Management Association**, 1931 Old York Road, Willow Grove, Pa. for two dollars each.

Write No. 49 on Inquiry Card—Page 32

For More Information Write No. 243 on Inquiry Card—Page 32→

PURCHASING



Dazzling new **SPRINGHILL BOND** is actually whiter than pure white salt

—YET COSTS NO MORE THAN “OFF-WHITE” BONDS!

WHEN YOU FIRST see dazzling new Springhill Bond, you sense your eyes are playing tricks on you. It's so *white*! Then you hold a sheet to the light and you're really amazed. No watermark!

The truth is, new Springhill Bond is whiter than any other unwatermarked bond paper on the market. A well-known research lab proved that new Springhill Bond was *measurably whiter* than salt, chalk, even surgical cotton!

But this remarkable new paper is more than just white. It's level and uniform, too. And crisp. Just try to pick up a sheet without making a crackling noise!

Compare Springhill Bond for whiteness, finish, opacity, and “crackle.” Once you do, you'll recommend it.

Extremely printable

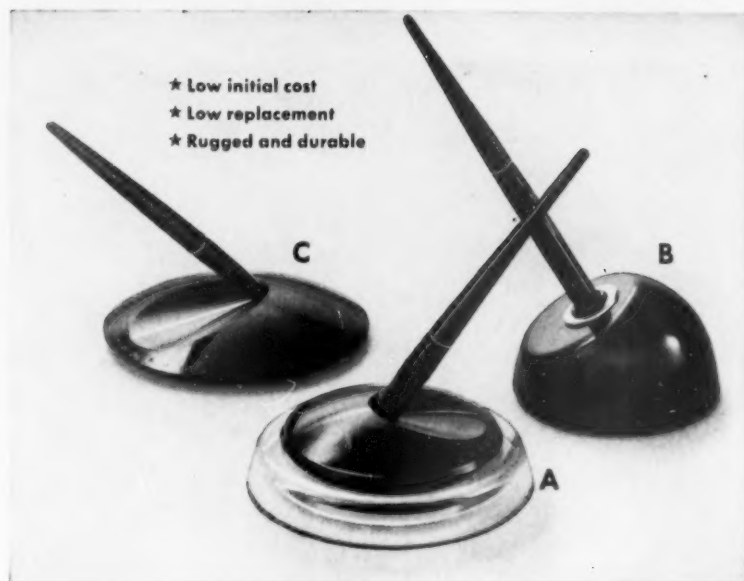
We insure excellent results every time by cutting a sample ream from every reel and having it tested on actual printing presses. Springhill Bond is made to order for offset and letterpress printing.

New Springhill Bond and Mimeograph are available in white and six colors in a complete range of stock sizes and weights. The Springhill line is also available in Duplicator and Ledger papers.



Look for this attractive new design. Handy “zip” openers on 8½ x 11 reams. All cartons polyethylene-lined to control humidity.

INTERNATIONAL PAPER 220 East 42nd Street, New York 17, N. Y.



These desk sets save replacement and repair dollars!

It's a fact! Almost all pen repair problems result from dropped or abused points. It's no problem for you if your company distributes Esterbrook desk sets to employees.

Esterbrook's 32 precision points are *instantly* replaceable—fit all Esterbrook pens, *regardless* of model. And, Esterbrook desk sets are *value* priced—always *dependable*!



A

Esterbrook FEED-MATIC® base desk set

Holds up to 6-month supply of ink. Reservoir in base seals ink against evaporation and dust—feeds enough ink to the point to write 500 words. Spill-proof. Black, colors (Model 444). **\$4.50†**



B

Esterbrook DESKMASTER® fountain pen desk set

Fastest selling desk set in America—Esterbrook's precision fountain pen in a lustrous, porcelain base. Compact, efficient. In popular colors and black (Model 112).

Black **\$3.75†**



C

Esterbrook RECORDER® ball point desk set

Writes 6 months in normal office use—A truly dependable ball point! Comes in choice of ink colors, fine or medium point. Deluxe Black, colors, \$3.95† Black **\$2.95†**

All desk sets available with chain and adhesive base for public counter use. Also doubles for use with two ink colors.

†List price per single unit. See your supplier for quotations.

Esterbrook®

*T.M.—The Esterbrook Pen Co.

10-DAY FREE TRIAL—Get one of these quality Esterbrook desk sets from your regular dealer. Use it 10 days. If you aren't completely satisfied, return it to your dealer with *no cost* to you.

For More Information Write No. 247 on Inquiry Card—Page 32

Office Equipment



Colors to blend with modern or traditional office decors are featured in the new **typewriter stand** recently put on the market by **KOL, Inc.**, 2323 Ellis Avenue, St. Paul 14, Minn. Other regular features of the stand are: non-marking rubber casters; 1-inch tubular steel legs; and double-duty wings that snap into place in either up or down position. An additional feature is that it is shipped knocked down. It weighs 18 pounds and is thus light enough to be shipped by parcel post.

Write No. 50 on Inquiry Card—Page 32



An integrated data processing device has recently been introduced by **Victor Adding Machine Co.**, 3900 N. Rockwell St., Chicago 18, Ill. It consists of a full-keyboard adding machine which activates a tape punch. The two units occupy slightly more than standard typewriter space. This new machine expedites forecasting, planning, sales analysis and inventory by speeding-up the flow of facts and figures. The data punch produces two records simultaneously—a detail strip for immediate accounting data and a punched tape which can be directed to digital computers and processors. It will produce 5-, 6-, 7- or 8-channel punch tape.

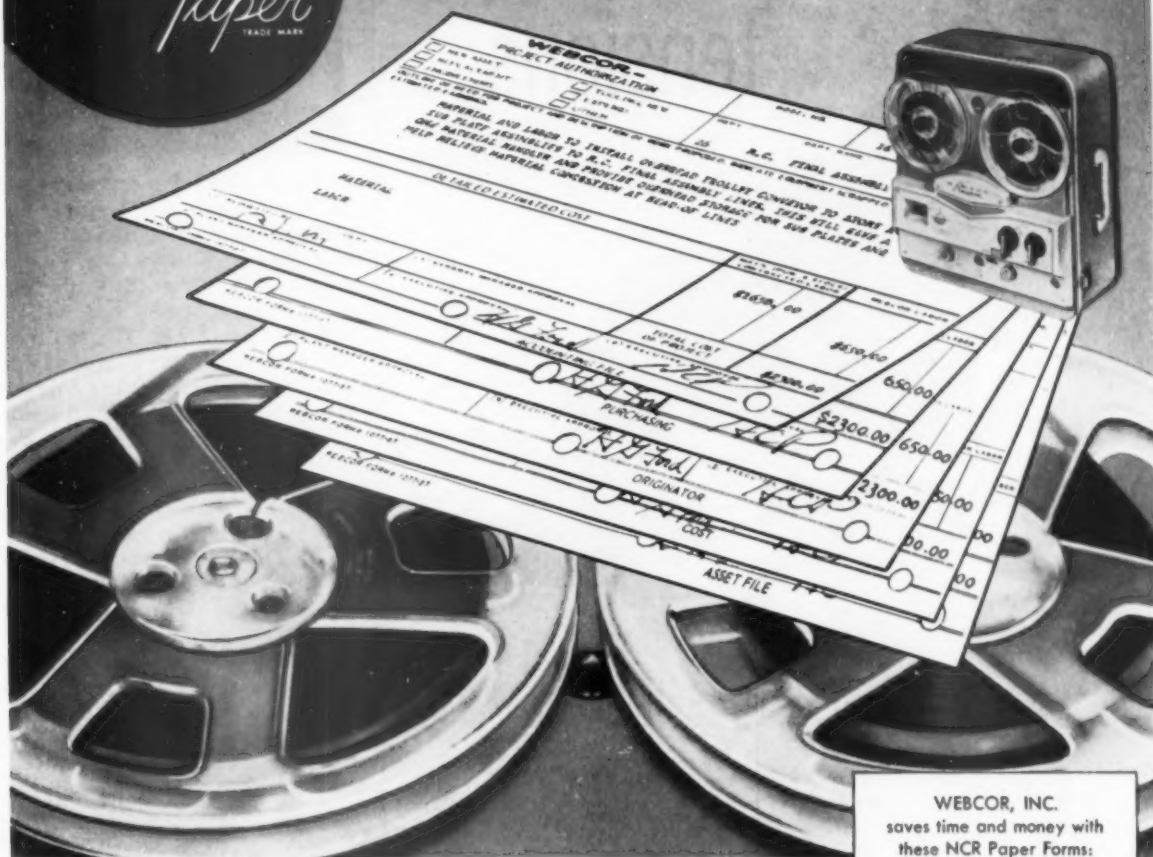
Write No. 51 on Inquiry Card—Page 32

NCR
no carbon required
Paper
TRADE MARK



WEBCOR, INC.

"Leading producer of high fidelity tape recorders and fonographs"



"NCR PAPER saves more than its cost every year, in every department."—WEBCOR, INC., Chicago, Ill.

"Time is saved in every department through the advantages of NCR (No Carbon Required) Paper. This repays the yearly cost of NCR Paper every six months.

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Vice-President of Webcor, Inc.

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Parts requisition	Service dept. requisition
Repair order	Leave of absence
Report of closed project	Credit memo
Purchase order revision	Shipping memo
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Data sheet	
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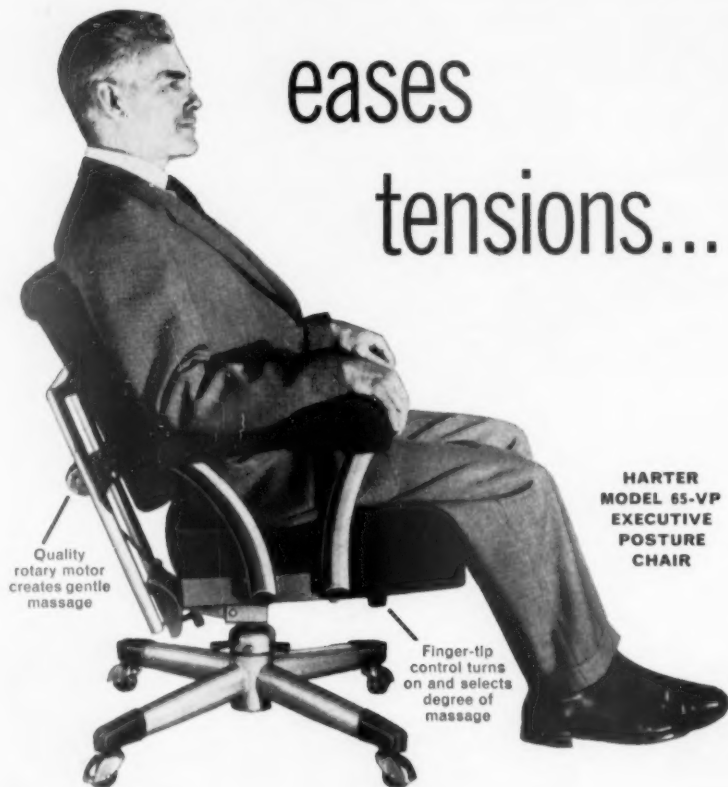
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MARCH 16, 1959

For More Information Write No. 244 on Inquiry Card—Page 32

147



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MODEL 65-VP
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CHAIR**

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Tensions... decisions... deadlines got you all tied up in knots? Just lean back in a Harter 65-VP Executive Chair, select the Swedish massage action you prefer and relax. Cool, extra-deep foam rubber cushions in seat back and arms transmit massage, gently relieving tensions. In a few minutes return to your work refreshed and alert. The bigger your job, the more you'll appreciate this chair.

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Massage action also available in the Harter chairs on the left. Each is a top value in its price range.

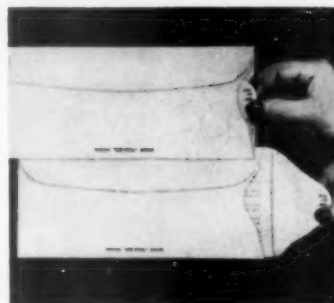
HARTER CORPORATION • 329 Prairie • Sturgis, Michigan

HARTER

**POSTURE
CHAIRS**

For More Information Write No. 245 on Inquiry Card—Page 32

Office Equipment



A new third-class envelope has been developed by **Tension Envelope Corporation**, 19th & Campbell Streets, Kansas City 8, Missouri. Called "Sim-Pull" the envelope opens at the end with a pull of a small tab. The tab does not protrude, and is not visible until the recipient turns the envelope over. A spot of gum holds the tab in position until the envelope is opened.

Write No. 52 on Inquiry Card—Page 32

Art Metal Construction Company, 369 Broadway, New York 13, N. Y. has recently published a booklet which should prove helpful to all purchasing agents who are experiencing difficulties with office floor plans. Entitled, "Things To Be Done When You Move or Rearrange Your Office," the booklet is free upon request.

Write No. 53 on Inquiry Card—Page 32



A newly designed rotary card index by **Memo-Speed Products, Inc.**, 43 West 27th Street, New York 1, N. Y. is now on the market. Holding 150 cards, it gives access to 300 names. It can be placed on desk, slipped onto telephone or hung on the wall.

Write No. 54 on Inquiry Card—Page 32

PURCHASING

With IBM equipment and IBM punched cards, you have a unique data processing partnership. For behind this partnership is the pattern of IBM research, daily testing, the finest technical know-how, supported by more than forty years of experience. When you insist on IBM punched cards, you are guaranteed performance based on production techniques that are the models of precision engineering. The result: Your business has the finest in data processing.

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Association News



Panelists at the New York meeting discussed the problems involved in getting full value from chemical suppliers. Speaking is R. E. Schuster—P.A. for

the William S. Merrell Company and chairman of the program committee for the pharmaceutical and fine chemicals section—introducing the moderator.

Chemical Buyers' Hold Annual Mid-Winter Conference

The Seventh Annual Mid-Winter Conference of the Chemical Buyers' Group of the National Association of Purchasing Agents was held recently in Chicago and New York.

This year's theme was "The Challenging Future." Among the many distinguished speakers were H. H. Ewing, of the DuPont development department, who spoke on "New Chemical Materials of the Future"; and Fritz Von Bergen, assistant manager of the chemical operations department of Food Machinery and Chemical Corp., who discussed, "Changing World Chemical Markets."

Both meetings featured panel discussions on the subject "Generating Full Value From Your Suppliers." Two sales representatives and two purchasing agents participated in each panel.

Overall attendance at both meetings was approximately 250 chemical purchasing agents and buyers. This is over 175 more than the number that attended the initial meeting in 1953.

Richard W. Taylor of McKinsey & Company spoke on the subject "Controlling the Profit-Building Elements of Purchasing."



Arthur F. Kroeger, of the A. & H. Kroeger Organization, addressed the luncheon meeting on "The Economic Outlook." A. T. Ericson, assistant division P.A. of Lederle Laboratories and general chairman of the group, is seated on the left.



Norman T. Stiles, director of purchasing and traffic at Chemstrand Corporation, spoke on the subject "Economic Evaluation as a Guide to Raw Material Purchasing."

Hard Edge Flexible Back Band Saws. Hardened on the tooth edge only. The teeth are milled, then accurately set by machine. This type of band saw is furnished with regular and LANCER Hook Tooth pattern. Regular pattern teeth with two sets: Raker Set for general metal cutting, Group Set for sawing thin wall tubing, sheet metal, mouldings, and similar shapes. $\frac{3}{8}$ to $\frac{1}{2}$ inch in 100 foot safety reels. $\frac{3}{8}$, $\frac{3}{4}$, and 1 inch in 100 foot easy-pull boxes. All widths in 250 and 500 foot easy-pull boxes.



Diss-Croloy Circular Saw. Excellent for long-run production cutting of non-ferrous metals, and for cleaner cutting of plastics on bench or radial machines. High finish on sides. Less friction drag. Polished curved gullets produce free flow of chips. Closely controlled side clearance gives cooler running saw. Stock from 6 to 16 inches in diameter. Other sizes on request.



Style "P" Smooth Trimmer Saw. Eliminates sanding. Butt joints come out absolutely accurate . . . without tearouts or splintering. When joined, they fit precisely. Excellent for double-end tenoner work, also where $1/20''$ veneer is laminated to core, and for trimming lumber to size prior to end sharpening. Has four gauges of hollow ground . . . giving extra clearance that eliminates heat. From 8 to 30 inches in diameter.



Super-Safe Hand Hack Saw Blade. Unbreakable tungsten high speed steel blade. It's tough . . . strong . . . hardened on the tooth edge only. Scientifically designed to meet rigid safety requirements. Teeth stay sharp longer . . . increase production. Teeth range from 18 to 32 per inch. Also available in power blades—high speed steel, welded edge.



High Speed Steel Machine Hack Saw Blade. Made of hard, tough, strong steel that resists wear and cuts easily through metals that ordinary steel cannot cut. Recommended for stainless steel, chrome-nickel steels and similar alloys. Passes rigid inspection before being packed. Also available for hand use in 10" and 12" lengths. Power blades from 12 to 24 inches in length.

No matter what the job is, there's a Disston saw to do it better. In fact, Disston produces wood, plastic, and metal cutting saws—saws that last longer, and cut production costs. With Disston, you enjoy the true economy—the economy of quality.

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For More Information Write No. 248 on Inquiry Card—Page 32

Association News

Harry Hershfield at New York Purchasing-Sales Dinner

Harry Hershfield, internationally known humorist and raconteur, addressed the 25th annual Purchasing-Sales Dinner of the Purchasing Agents Association of New York at the Hotel Commodore. The title of his talk was "Are Salesmen and Purchasing Agents Necessary?"

The dinner meeting was attended by more than eight hundred purchasing, sales and management executives, as well as officers of the National Sales Executives Club, Sales Executives Club of New York, Sales Executives Club of Northern New Jersey and the Sales Managers Club.

F. Stan Romanse, purchasing agent for the Babcock & Wilcox Company and president of the Purchasing Agents Association of New York, presided.



All smiles are, left to right: Lew Norris, New York Stock Exchange; David Gibson, Worthington Corp.; Paul Farrell, Editor, PURCHASING Magazine; and Stan MacKenzie, U. S. Rubber.



The quality of the joke of George Baker, Port of New York Authority, is shown on the faces of, left to right: Gailon Fordyce, American Cyanamid; J. Dukehart Chesney, F. C. Huyck & Sons; and Walter Willets, Conover-Mast Publications, Inc.

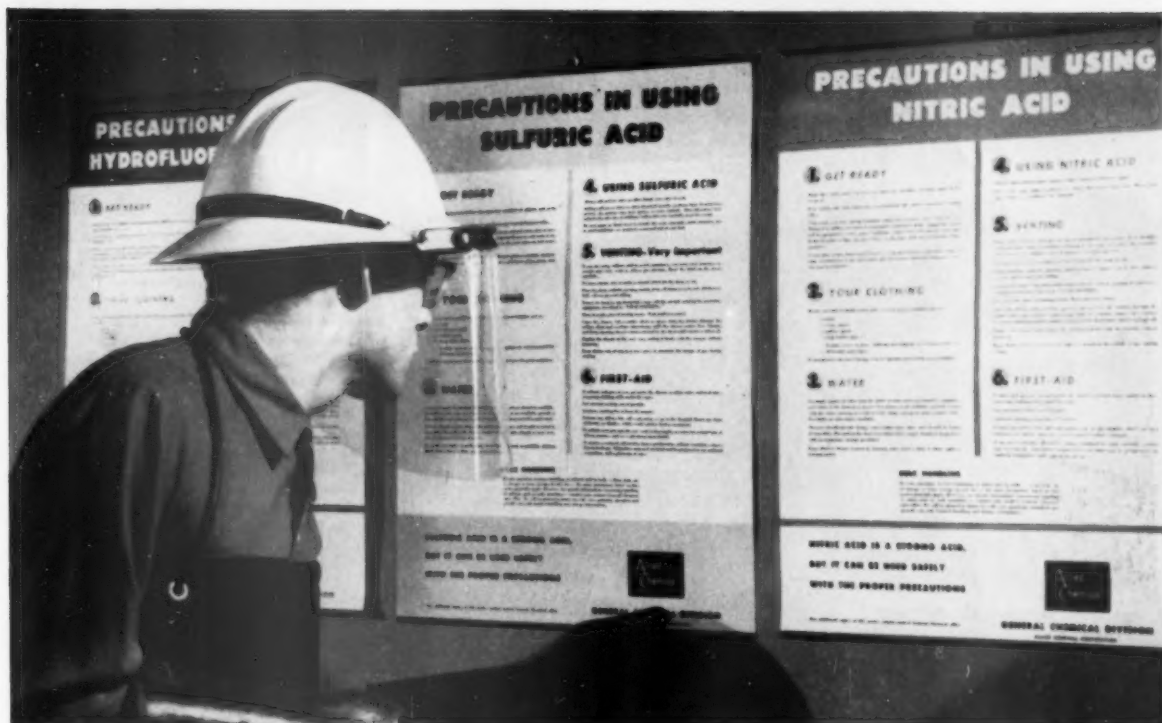


Harry Hershfield keeps them laughing loud and long. He received a standing ovation after his fine talk.



Grouped together in the foreground are, left to right: Bill Flint, Cluett-Peabody & Co.; Ed Drew, Allied Chemical; Stan Romanse, Babcock and Wilcox; and Phil Richmond, Aluminum Company of America.

Now Available from General Chemical...



3 New Safety Posters on the Proper Handling of Strong Acids

SULFURIC
HYDROFLUORIC
NITRIC

Here's essential information on how to handle sulfuric, hydrofluoric and nitric acids safely . . . from the people who know them best.

As the nation's leading producer of these strong acids, General Chemical now offers 3 safety posters which spell out the precautions that *must* be taken when handling sulfuric, hydrofluoric or nitric acid. The posters contain such important information as: the proper clothing to wear and the equipment to use; the use of water as a neutralizer; the importance of venting; first aid, and many other necessary precautions.

The posters are free. They are large and easy to read—17 inches wide by 22 inches long. They come

complete with metal rims, top and bottom, ready to post in a prominent position in your plant. To obtain any or all three, mail the coupon.

Mail Coupon for Posters!

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL CORPORATION
40 Rector Street, New York 6, N. Y.

PU-39

Please send your free safety posters checked below.

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- ☐ Precautions In Using Hydrofluoric Acid
- ☐ Precautions In Using Nitric Acid

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Title _____

Company _____

Address _____

City _____ Zone _____ State _____



GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Association News

Company President Addresses Florida Ass'n



J. M. Fox, president, Minute Maid.

John M. Fox, president, Minute Maid Corp., Orlando, Florida, addressed a recent meeting of the Purchasing Agents Association of Florida. Mr. Fox discussed a subject of interest to all purchasing people: "Should Purchasing be a Part of Top Management?"

In essence, Mr. Fox answered the question by stating that it all depends on the nature of the purchasing function at the particular company. "In some companies," he points out, "where a certain raw material is a large factor in the product cost, purchasing can be and often is a prime concern of the chief executive officer."

"On the other hand," he states, "there are some companies where the purchasing function is largely routine, where the sums involved are small and where it would not be good management for the top echelon to be too closely concerned with the day to day operations of the department."

Mr. Fox then went on to give three good reasons why purchasing should be closely aligned to the company's top management. One, an intelligent purchasing campaign can make money for the company. Two, purchasing presents the face of the company to the outside world. Three, purchasing is an excellent executive training ground.

Fourth Education Meeting at South Bend Ass'n

"Price and Cost Analysis" was the theme of the fourth in a series of five educational meetings held by the South Bend Purchasing Agents' Association at the Club 66, Niles, Michigan.

Directed, as usual, by Professor Vincent R. Raymond of the Notre Dame College of Commerce, the discussion concerned an actual case history taken from the files of the Harvard Business School. It touched the subjects "What Is a Fair Profit" and "What Course to Follow in the Case of a Projected Supplier Price Increase." The theory behind these case histories is not to give an opportunity to draw a definite conclusion, but to stimulate the individual to creative thinking and the ability to thoroughly analyze the situation.

A unique twist to the meeting was added when Professor Raymond, unknown to anyone in advance of the meeting, had a bona-fide sales representative of a major plywood company make an actual sales call on J. N. Grieveson of Electro-Voice, Inc., one of the members present. As things developed, the salesman found that, due to an unfortunate experience with his product, the visit to Mr. Grieveson was not merely a routine call. After the experiment, the techniques and manner in which the call progressed was dissected by all members present.

The entire meeting progressed at a brisk pace, with everyone present taking an active part in the discussions. It was felt that it was an extremely satisfying experience for all present.

Ahl at Twin City

G. W. Howard Ahl, executive secretary of the National Association of Purchasing Agents, conducted a panel discussion on the personal aspects of "Salesman—Purchasing Agent Relationship" at the Twin City Association of Purchasing Agents. On the program were President Henry J. Frommelt and a panel of four members of the Minneapolis Sales Executive Club.

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Hartley Foundry Div., London Concrete
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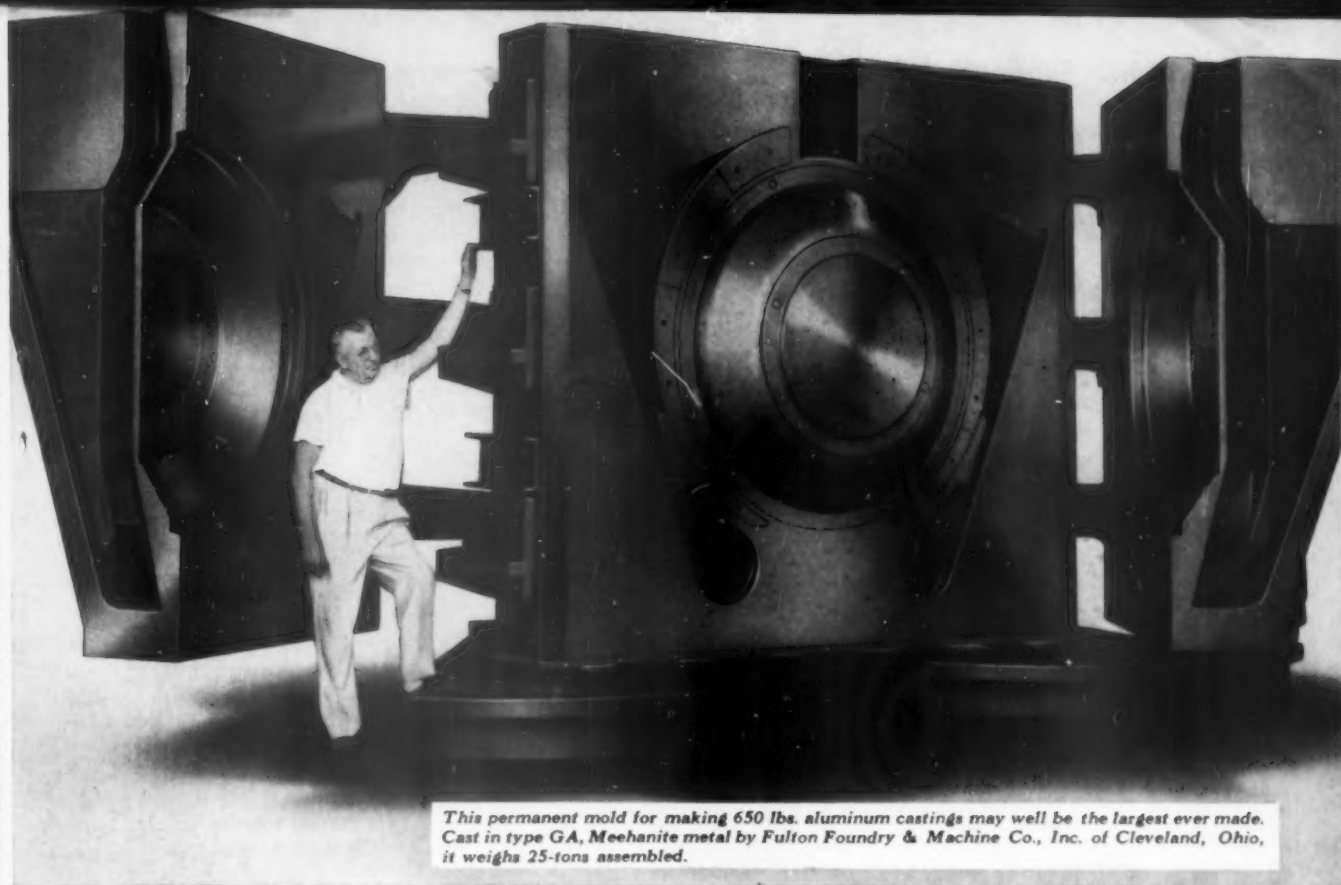
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Bulletin 23 — "Meehanite® — The Metal For
Permanent Molds."

Write today to Meehanite Metal
Corporation, Department 28,
714 North Avenue, New Rochelle,
New York.

MEEHANITE®

For More Information Write No. 251
on Inquiry Card—Page 32→
PURCHASING



This permanent mold for making 650 lbs. aluminum castings may well be the largest ever made. Cast in type GA, Meehanite metal by Fulton Foundry & Machine Co., Inc. of Cleveland, Ohio, it weighs 25-tons assembled.

Meehanite permanent molds offer resistance to heat checking and distortion from thermal shock.

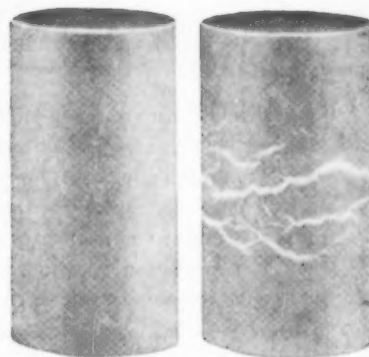
Premature cracking or disintegration of surface is a serious problem to the users of permanent molds. Severe service conditions demand the selection of a metal with a dense close-grained structure which maintains dimensional accuracy and resists the disastrous effects of thermal shock.

Meehanite metal has the ability to more than meet these requirements and is used extensively for permanent molds in the production of both ferrous and non ferrous castings, glass, plastics and other materials. The huge mold illustrated is proof of the confidence placed in Meehanite.®

The chief advantage of a Meehanite mold is consistent uniformity of structure throughout the casting. Meehanite's dense, stabilized structure resists thermal shock, insures freedom from distortion and dimensional changes. Easily machined, it provides the smooth, highly polished surface so essential to good finish and long production life.

Meehanite molds can be cast closely to shape to reduce machining operations. Also, they may be heat treated or flame hardened where high hardness is required.

Write for free literature: Bulletin 23 — "Meehanite® — The Metal For Permanent Molds."



The block on the right reveals what happens when an ordinary permanent mold material is suddenly heated and cooled. The Meehanite block on the left, given same test, shows complete freedom from surface cracking.

MEEHANITE BRIDGES THE GAP BETWEEN CAST IRON AND STEEL[®]

MEEHANITE METAL

MEEHANITE METAL CORPORATION, NEW ROCHELLE, NEW YORK

REDUCE MANUFACTURING COSTS

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MOLDED ORGANIC PARTS

REDUCE COSTS

High-density molded organic part replaces brass pressure plate in clutch assembly



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Semi-flexible molded organic parts replace leather washers in deep well pump



SOLVE DESIGN PROBLEMS

Resilient molded organic part replaces combination metal-hard rubber vibration damper



● A fresh approach to design problems with WORLD BESTOS Molded Organic Parts can pay off in improved product performance and reduced manufacturing costs. Applications range from industrial and automotive equipment to home appliances. Molded Organic Parts can be built to meet virtually any shape, size or performance specifications. Parts can be supplied for testing and evaluation or on a production basis. For complete details, send samples or blueprints to WORLD BESTOS, New Castle, Indiana. Phone Jackson 9-4790.

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Association News

Dayton Ass'n Round-Up

Dr. John A. Hoagland of Michigan State University gave the Purchasing Agents Association of Dayton an outstanding presentation in the form of a forecast of economic conditions for the coming year. Dr. Hoagland gave his "Inside Dope" at the Sky Terrace of the Miami Hotel. It was one of the largest attendances in some time.

The annual dinner dance under the chairmanship of Tom Armstrong, was held at a later date at the Miami Valley Country Club. Over one half of the membership attended. Those who did not attend missed the party of the year which was made possible by Tom and his committee.

Public Relations Night brought guest speaker Robert S. Burnett from The W. E. Caldwell Co. of Louisville, Kentucky. Bob is vice-chairman of public relations from the Louisville Association.

Willets at Metropolitan Club

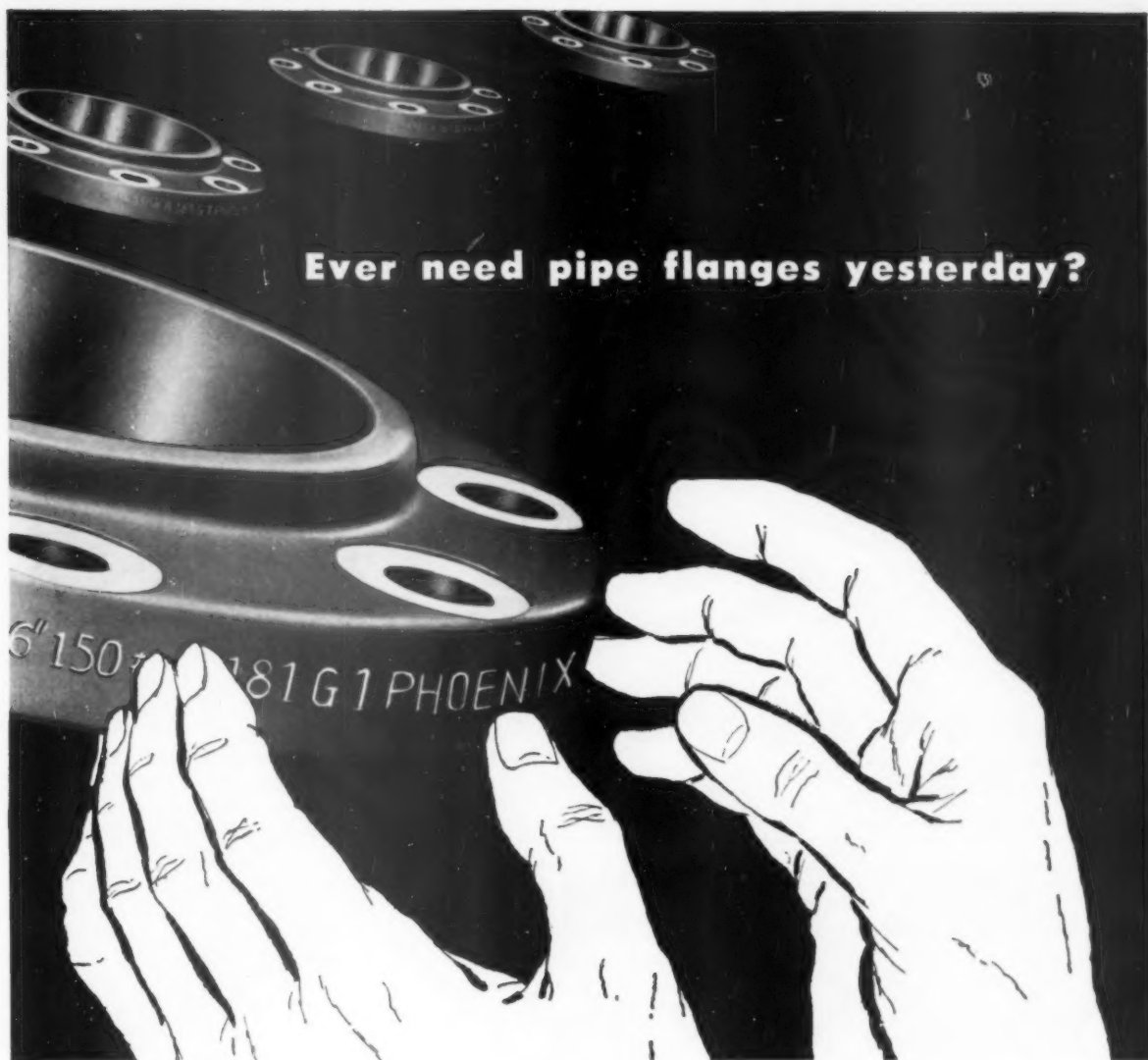
Walter E. Willets, purchasing agent of Conover-Mast Publications, Inc., and consulting editor of PURCHASING Magazine, spoke at a recent meeting of the Metropolitan Purchasers Club. "Buyers Are Always Learning" was the subject of his talk.

As the chairman of the Eighth District Education Committee, Mr. Willets is particularly well qualified to discuss the subject of purchasing education.

Washington D.C. P.A.'s Get Soft Sell

The Purchasing Agents Association of Washington, D. C. met recently at the Ambassador Hotel. The principal speaker was Mr. Brook Lee from Chester, Pennsylvania. The subject of Mr. Lee's presentation was "Psychology—The Soft Sell."

PURCHASING



Ever need pipe flanges yesterday?

Try your TWX or telephone the next time you need pipe flanges in a hurry. Phoenix will get them into your hands quickly without order processing red tape and delays. All popular types and sizes are available for immediate shipment from Catasauqua, Pa. in the East and from Joliet, Ill. in the Midwest by air, truck, rail or water. You never have to worry about uniform quality because Phoenix is an old hand at forging and machining the best flanges you can buy. When speedy handling is essential,

or you need answers quickly, or you require special service of any type, get in touch with Phoenix. You will like doing business with the alert, fast-moving Phoenix organization.

Write for free 36-page pocket-size booklet containing useful data on flanges. It is one of the handiest booklets available for quick, easy reference.



Leading Manufacturers of Pipe and Tank Flanges and Commercial Forgings



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YOU CAN BUY QUALITY ECONOMICALLY

WITH MARATHON WASHROOM SERVICE



Marathon towels and tissue cut time and costs while providing sanitary convenience in washroom maintenance. Soft yet strong... wet or dry... highly and instantly absorbent, one Marathon towel will do the job every time. Marathon toilet tissues are white, soft and absorbent with superior breakdown ability. You need less of quality products to do a better job—true economy!



Single, multi- or C-fold towels, bleached or unbleached. Service Roll or Dorsette Facial Grade Tissue. Dispensers.

MARATHON

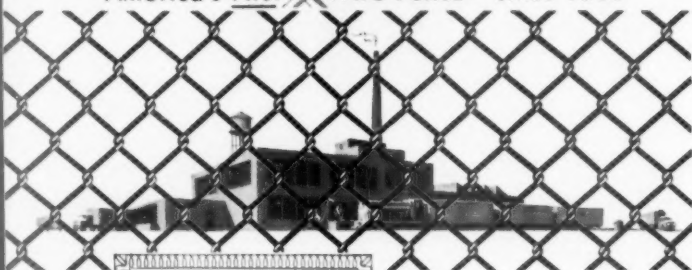
A Division of American Can Company
MENASHA, WISCONSIN



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Association News

McVicar Begins Speaking Tour



C. Warner McVicar, director of purchasing and traffic, Rockwell Manufacturing Company, and national director of Purchasing Agents Association of Pittsburgh, spoke recently at the University of Wisconsin in Milwaukee in a seminar sponsored jointly by the University of Wisconsin, Wisconsin Manufacturers Association and the Milwaukee Association of Purchasing Agents. On March 17, he is on the program of the Michigan State University seminar in Lansing, Michigan. This is sponsored also by the Purchasing Agents Association of Central Michigan. On April 14 at Drake University, Des Moines, Iowa, he will speak at a seminar sponsored by the Iowa Purchasing Agents Association.

Pittsburgh Ass'n Hears Affleck

Gordon Burt Affleck, president of the National Association of Purchasing Agents and purchasing agent of the Church of Jesus Christ of Latter-day Saints, gave an inspiring address to the Purchasing Agents Association of Pittsburgh at the Pittsburgh Room of the Penn-Sheraton Hotel. Sixth District Vice President Ted R. Thompson of Dayton, Ohio introduced Mr. Affleck.



Six choices of corrosion resistant tubes and sockets

- 4130 alloy steel tube with alloy steel tip and socket.
- 403 stainless steel tube with alloy steel tip and socket.
- 403 stainless steel tube with 416 stainless tip and socket.
- 316 stainless steel tube with alloy steel tip and socket.
- 316 stainless steel tube with 303 stainless tip and socket.
- Monel tube with Monel tip and socket.

Tubes and sockets listed above are available in Type 100 Mastergauge which are designed for extreme service and pressures. Type 101 Mastergauge, for medium and high pressures, are available with:

- 4130 alloy steel tube, with alloy steel tip and socket.
- 403 stainless steel tube, with 416 stainless steel tip and socket.
- 403 stainless steel tube with alloy steel tip and socket.

STAINLESS...from socket to tip

Another Marsh development! The superlative Mastergauge is now available with stainless and alloy steel bourdon tubes. Try to find a corrosive service that isn't covered by range of materials listed above.

Tube, socket and tip—every part subjected to a corrosive medium—are fused into one piece by the "Connoweld" process... the exclusive process that distinguishes the Marsh Mastergauge from all other gauges.

Whether you need a gauge for corrosive service or any other critical application, Mastergauge is the one correct answer. It gives you the leak-proof Connoweld construction, the stronger, more durable copper-clad Marshalloy case, the precision Mastergauge movement, the "Recalibrator" to preserve its unmatched accuracy. Ask for data covering your specific gauge needs.

MARSH INSTRUMENT CO. Sales Affiliate of Jas. P. Marsh Corp. Dept. G, Skokie, Ill.
Marsh Instrument & Valve Co. (Canada) Ltd. 8407 103rd St., Edmonton, Alberta
Houston Branch Plant: 1121 Rothwell St., Sect. 15, Houston, Texas

MARSH GAUGES



Explosive force merely opens safety back—

Photo shows result of laboratory test in which gun cartridge was discharged in rear compartment of Safecase. Thin, tough back yields to abnormal pressure, but cannot be dislodged by blowout. Front of gauge remains intact, protected by heavy metal barrier.



Stainless steel tube in the new SAFECASE

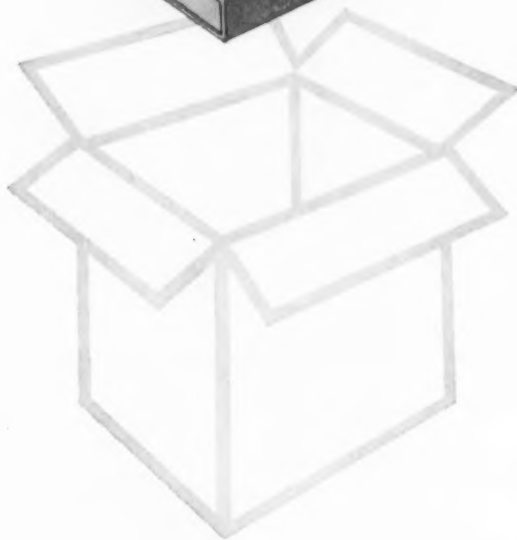
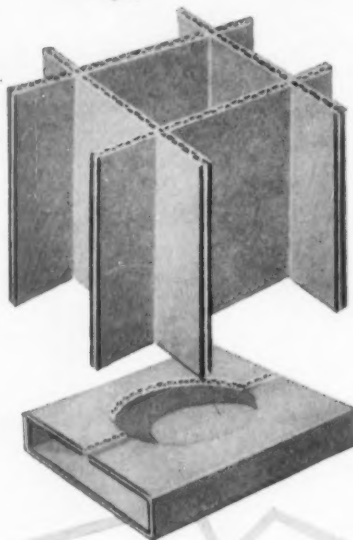
Here is a great combination... Marsh Mastergauge with corrosion resistant bourdon tube in the revolutionary Marsh Safecase... everything it takes for corrosive service where a surge of over-pressure can occur.



What you should know about



Does your corrugated box



For most products, proper interior packing is one of the most important factors in corrugated container design. Through its careful selection you can often prevent a costly chain reaction of damage claims and rejected shipments.

How much and which types to use will depend primarily on your product, its construction, how it is normally handled and shipped as well as the type of protection needed. You may find, for example, that *anchoring* the contents is paramount. Some packing pieces are made expressly for this purpose. Others *cushion* against impact and vibration. Still others are used to *separate* packed units. A fourth group's primary job is to *suspend* the contents within the container.

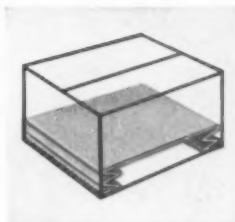
The forms of interior packing are as versatile as the items they protect. A few of the most widely and successfully used types are described here:

SPRING PADS

Like innersprings, these accordion-shaped pads help dissipate and cushion shock. Their buffer action absorbs vibration

interior packing for Union Boxes.

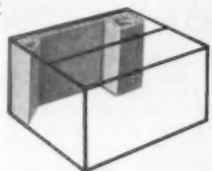
need an "innerspring mattress"?



packaged product and sets up harmonic resonance.

CORNER PIECES

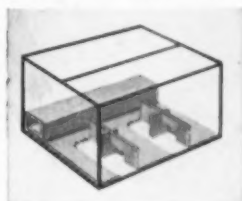
These units "round off" the corners of the box's interior—provide extra protection at these vulnerable points. They cushion against crushing caused by improper stacking and impact resulting from humping or switching of freight cars, throwing, dropping and other shipping hazards that might squeeze or otherwise damage the contents.



which can cause loosening of parts and actual breakage—particularly where it coincides with the natural frequency of the

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Die cut inner packing comes in an almost limitless range of shapes, sizes, thicknesses. It can be made to perform practically any protective function. The pieces nearly always are tailored around the product—usually a fragile article, an item of irregular shape or one of unbalanced construction. Die cut inner packing is being used increasingly today because of the wide variety of items now shipped in corrugated containers.



Interior safeguards recommended or developed by Union-Camp are saving many companies thousands of dollars annually in packaging costs. Not to mention untold dollars that have been saved through the elimination of shipping damage. Whatever your product, your Union Box representative will be glad to work with you in determining the most efficient and economical approach to your particular packaging operation.



Write for free, informative booklet "Interior Packing of Corrugated Boxes"

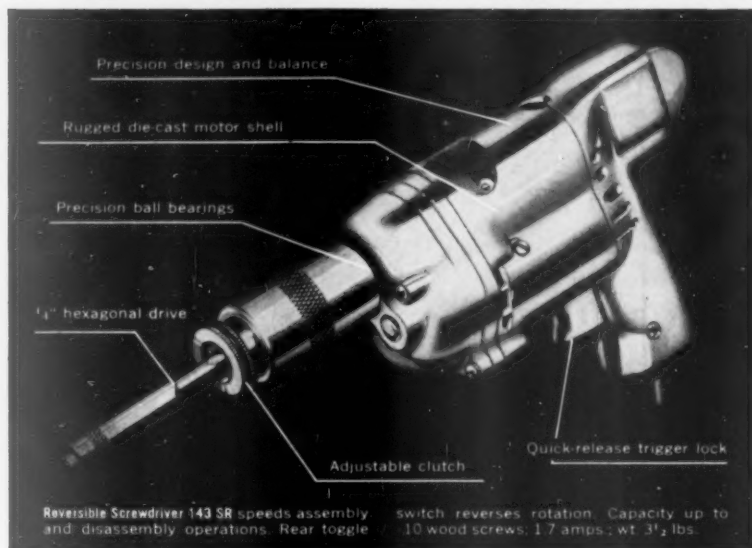
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Book Reviews

Economic Indicators—Their Use in Business Forecasting

By Henry M. Platt

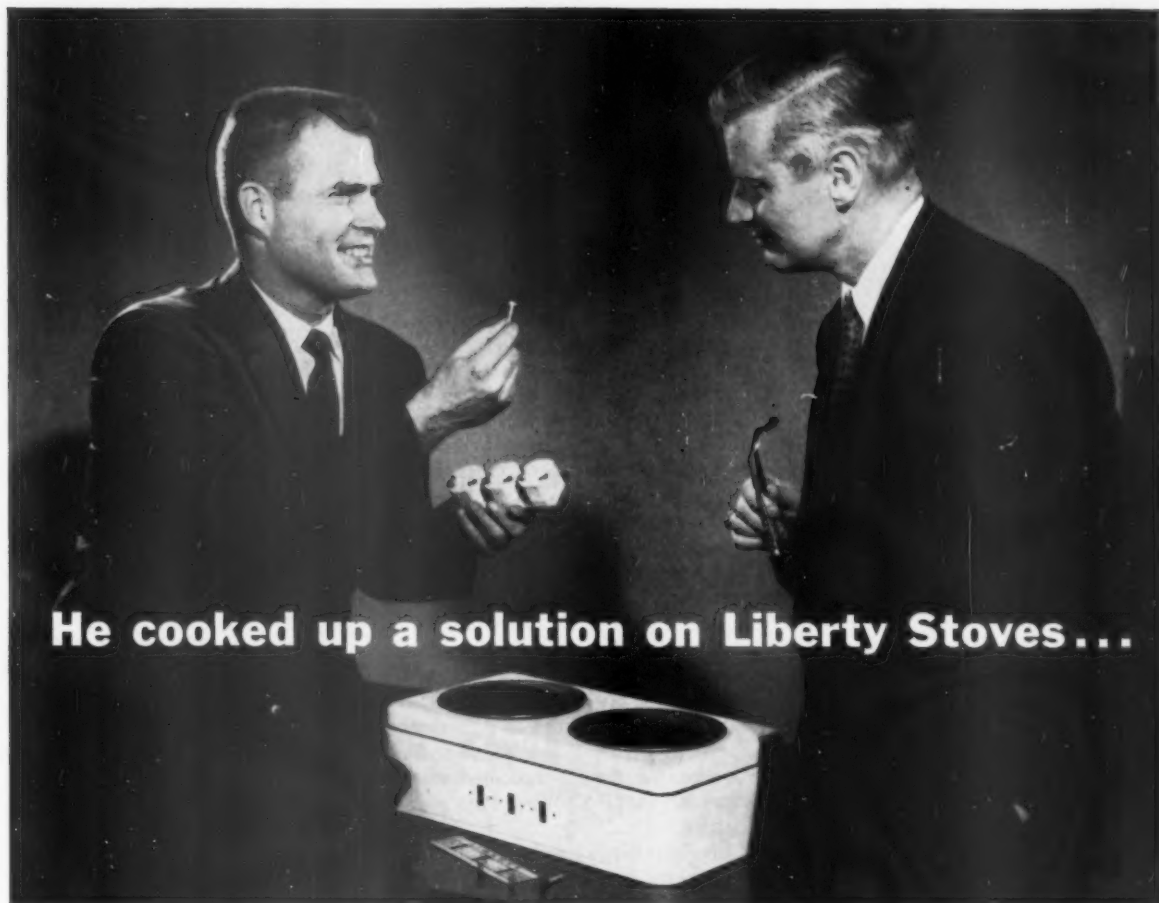
The Amos Tuck School of Business Administration, Free
Dartmouth College
Hanover, N. H.

The P. A.—particularly in the smaller-sized company is strategically situated when it comes to economic information. More than any other individual in the company, his contacts with suppliers give him a "feel" for changes in business sentiment that best qualify him as a company economist. And, of course, economic knowledge is vital for sound purchasing and inventory management decisions. That's why the progressive P. A. will find this 18-page booklet a useful reference. In easy-to-read fashion it explains how 21 economic indicators of the National Bureau of Economic Research can be used as forecasting tool. These key indicators provide important clues as the current stage of the business cycle; often they can be used to predict cycle turns months in advance.

New Safety Booklet

The Safety Committee of the Grinding Wheel Institute, Cleveland, Ohio, recently published a 24-page booklet entitled, "Safety Recommendations for Grinding Wheel Operation." The booklet discusses, in layman's language, such technical subjects as maximum peripheral speeds, strength classification of grinding wheels, definitions of maximum speeds, the effect of wheel speed on grinding action, safety guards, mounted wheels, proper mounting procedures, truing and dressing, and the do's and don'ts for safe grinding. It also contains a handy table for the operator's use in converting revolutions per minute (R.P.M.) to surface feet per minute (S.F.P.M.)

Copies of the booklet may be obtained at no charge from the Grinding Wheel Institute, 2130 Keith Building, Cleveland 15, Ohio.



He cooked up a solution on Liberty Stoves...

Riveting porcelain switches let 1 girl do the work of 6

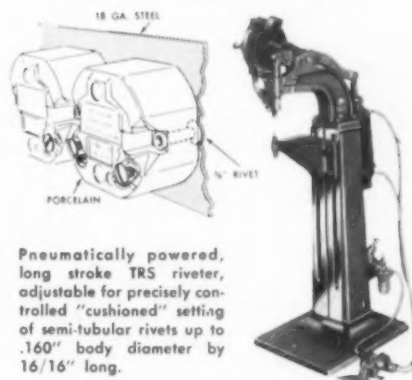
"You don't need to tie up six girls on slow, costly, nut-and-bolt assembly of porcelain switches to this mounting plate. You can do it on an automatic riveter... with one girl, low cost rivets, and no switch breakage..."

This was the TRS sales engineer's solution to the problem of Liberty Electric Co., Inc., Indianapolis, maker of fine electric table stoves. He had the rivet and machine know-how to work out the answer... an answer that saved five-sixths of the labor.

Let the TRS man look over your assemblies. You'll find that he has the viewpoint of a manufacturing engineer, and an unusual knack for making fastening simpler, faster, better.

Of course he will recommend TRS rivets. But he will give you sensible reasons why they are more reliable in essential qualities and uniformity. Ask to see the TRS Quality Control Album... one significant result of a five-year modernization of this pioneer company. Modernization of people, policies, production and service facilities. *You'll like to do business with the new TRS... we'll make sure of it.*

THE TRS MAN'S SOLUTION



Pneumatically powered, long stroke TRS riveter, adjustable for precisely controlled "cushioned" setting of semi-tubular rivets up to .160" body diameter by 16/16" long.

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on Inquiry Card—Page 32



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Purchasing People

(Continued from page 61)

Alfred W. Arenander, Jr., purchasing agent for West Virginia Pulp and Paper Company, New York, N. Y. since 1942, has been promoted to manager of trade relations. This is a newly-created position. In his new post Mr. Arenander will act in a liaison capacity with sales and purchasing in strengthening relations with customers and suppliers.

Mr. Arenander will be succeeded as purchasing agent by **William F. Merrilees**. Mr. Merrilees had been purchasing agent of the company's Kraft Division at Charleston, S. C.

Mr. Arenander has been associated with purchasing since he joined the company 30 years ago. He is active in the New York and National Association of Purchasing Agents. He is a member of the Materials Committee of American Paper and Pulp Association and a member of the Technical Association of the Pulp and Paper Industry.

Mr. Merrilees has been with the company's purchasing organization since 1936. He became assistant to the purchasing agent in 1942. He was transferred to the Charleston mill as purchasing agent in 1948. He is a member of the National Association of Purchasing Agents.



Thomas H. Thomson

Martins Steel Corporation, Mansfield, Ohio has announced the appointment of **Thomas H. Thomson** as acting manager of purchasing. He succeeds **Charles R. Oberlin** who has been made manager of production control and scheduling. Mr. Thomson was

formerly district sales manager of the Cunningham Supply Company, for five and one half years prior to joining Martin Steel. Before that he had been associated with Jack and Heintz, Inc., Cleveland for several years. Mr. Thomson is a member of the North Central Ohio Purchasing Agents Association.

International Business Machines Corporation has announced the appointments of **Charles E. Anable** and **Richard W. Little** as purchasing agents. Mr. Anable has been assigned to the company's research laboratory at Yorktown Heights, New York; Mr. Little to the supplies division engineering laboratory at Endicott, New York. Mr. Anable joined IBM in 1940. Prior to his present appointment he was manager of general purchasing for the supplies division at Endicott. Mr. Little has been with the company since 1942, and was previously a purchasing agent at Endicott.

M. Stanley Cogan has been appointed director-purchasing of Railway Express Agency at New York, N. Y. Mr. Cogan had been assistant vice-president Eastern region. He started in the express business in 1917 at Philadelphia, Pa. Among the many administrative positions he has held are, superintendent of the Boston division; general manager, Mississippi division, St. Louis, Mo., and General manager, New York City divisions.

Frank M. Watson, Jr., has been named assistant manager of the purchasing department for Virginia-Carolina Chemical Corporation, Richmond, Va. He succeeds **Preston L. Parrish** who has become sales manager for inorganic chemicals. Mr. Watson has been with the company since 1938. He advanced within the department and was named buyer in 1952. Mr. Parrish joined V-C in 1924. He was transferred to the purchasing department in 1927 and named chief clerk in 1944. He was promoted to assistant manager of the purchasing department in 1950.

PURCHASING



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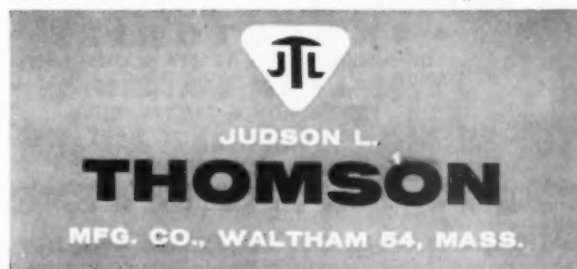
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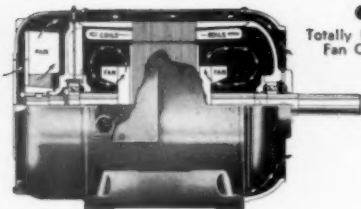
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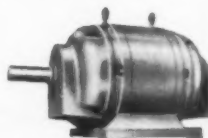


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1959

36th Edition



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168

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MARCH 16, 1959

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Three sectors of the tapered portion of the CONE-LOK nut are preformed inwardly (Fig. 1). When the Nut is applied to a bolt, these conforming sectors are elastically returned to a circular configuration and create an inward and downward pressure which produces intimate contact between the load carrying flanks of the nut and bolt threads (Fig. 2). The shape of the cone sector displacement insures conformity with the mating bolt and maximum friction contact area. . . . The closed stress path in the locking portion of the nut and the advantageous distribution of locking pressure, produce a locking device of high fatigue life . . . and equivalent locking force is exerted at only a fraction of the stress of any slotted type locknut. CONELOCK maintains its locking action through many re-applications. . . . It is adaptable to high, and low torque assemblies . . . to high torque stop-nut applications . . . and may be obtained in sizes from No. 10 to 1½", Full and Thick dimensions are "Standard".

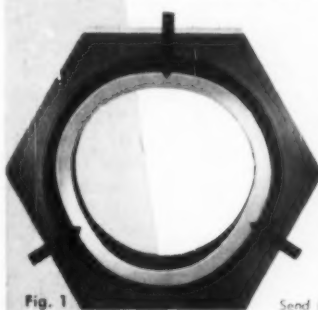


Fig. 1

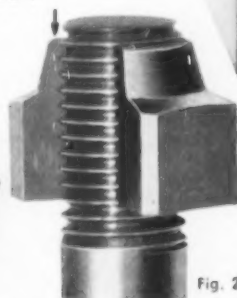


Fig. 2

Send for brochure which includes complete engineering specifications.

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Employment Service

PURCHASING AGENT

Nationally known manufacturer needs qualified man to be responsible for its purchasing activities. Must have strong background of training and experience in the purchasing field. Also must have proven record of administrative ability, along with good understanding of the operations of an industrial enterprise and our economic system. Must be positive, energetic and able to promote effective vendor relations, as well as work effectively with our management organization. Prefer college graduate between 32 and 45 years of age. Good salary and bonus plan, plus many other benefits. Write Box 512.

Experience: Three years as purchasing Agent - purchasing machinery, steel, production and non-production items and office machines and supplies. Handle inventory control, traffic and coordinate purchasing function with other departments as well as designing the forms used. Industrial—ass't plant superintendent, office manager and accounting—experience in interviewing and hiring of people for both production and administrative positions. Banking—Ass't Cashier. Retail—Buyer and salesman of furniture and appliance. **Education:** Accounting, purchasing and management—Member of N.A.P.A. **Will relocate.** Write: Box 349

PURCHASING ANALYST

Medium sized Mid-Western manufacturer of wood and steel equipment has opening for a qualified purchasing analyst. Applicant must have five years of experience in diversified procurement, college graduate, with a degree in engineering or business administration. Will also be required to do some buying. Write to PURCHASING Magazine, Employment Service Department, Box 511, 205 East 42nd Street, New York 17, New York.

Experience: Ten years Marine Corps purchasing offices. Diversified supplies and equipment. Present rank master sergeant. Positions held—clerk-typist to supervisor of 30 employee office. Will attend night school.

Education: Correspondence courses in military subjects.

Will relocate. Southwestern U.S.

Write: Box 350

Experience: Fifteen years one firm—6 years as PA buying castings, steel, fasteners, maintenance supplies. Prior experience—5 years administrative ass't, 5 as supervisor standard cost department. Was associated with major steel producer for 5 years, budget and cost.

Education: Three years college

Will relocate.

Write: Box 351

Experience: Good Tech - Commercial Spanish—four years Latin America. Two and one half years in purchasing dept. making purchases, consular dec's in Spanish. Previous experience in parts inventory control, ordering and warehouse organization factory, training in farm and road mach.

Education: One year College.

Prefer: South America

Write: Box 352

Experience: Five years purchasing experience with metal fabricators. Thoroughly familiar with systems and procedures of production and purchasing, also expediting and inventory control. Have handled dollar volume up to \$700,000 yearly. Have established budget and cost analysis procedures.

Education: Three years night college—Major Business management.

New York City preferred

Write: Box 353

Listings in this department are offered without charge. Both purchasing department personnel interested in changing jobs and employers in search of replacements or additions to their departments may take advantage of this service. When writing, specify whether you want the applicant's form or the employer's form. Address all correspondence—whether for forms, or in answer to an employment advertisement, to: Box No., Employment Service Department, PURCHASING Magazine, 205 East 42nd Street, New York 17, New York.

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Experience: Three and a half years asst. purchasing agent ferrous and non ferrous metals wire—ribbon—strip—sheet—tube. Complete knowledge—mil SAE—ASTM specs all types plating—electro tinning & hot dip machinery dies—jigs & components packaging—boxes—corrugated—plastic—printing

Education: 2 years College

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Write: Box 347

Experience: Five years experience as buyer of construction and related materials. Capable of establishing specifications, selection of bidders and awarding contracts and orders, for supplies and equipment.

Education: AB degree—major in Economics.

Will relocate.

Write: Box 348

Experience: Three years Navy, two years in industrial sales, one year as purchasing agent for company producing ferrous and nonferrous castings and light fabricated metal parts. Duties covered all purchasing, expediting and utilization. Seek opportunity in progressive organization with room for vertical growth through purchasing and/or personnel administration.

Education: A.B., Business Admn.

Will relocate. Write: Box 355.

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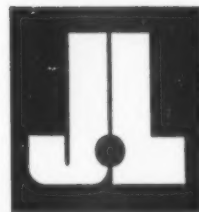
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Advertisers In This Issue

A	
Ace Drill Corp.	106
Advance Glove Mfg. Co.	164
Air Reduction Sales Co. & Subsidiaries	38
Allied Chemical Corp., General Chemical Division	153
American Brass Co., The	39
American La France Division of Sterling Precision Corp.	36
American Screw Company	122
American Smelting and Refining Company	53, 54, 55, 56
American Telephone & Telegraph Co., Long Lines Dept.	24
Ames Co., B. C.	168
Amplex Division, Chrysler Corp.	58
Anaconda Copper Mining Co. & Subsid. Cos.	39

B	
Baldwin-Lima-Hamilton Corp.	67
Barreled Sunlight Paint Co.	40, 41
Bearings Co. of America Div. of Federal Mogul-Bower Bearings, Inc.	169
Bearings, Inc.	43
Behr-Manning Co.	128, 129
Bethlehem Steel Co.	174
Black & Decker Mfg. Co.	130, 131
Bower Roller Bearing Division Federal Mogul-Bower Bearings, Inc.	37
Bridgeport Brass Company	136, 137
Bulldog Electric Products Co.	103

C	
Carpenter Steel Co., The	99
Central Paper Company	63
Chrysler Corp., Amplex Division	58
Classified Advertisement	166
Cleveland Container Co., The	162
Colorado Fuel & Iron Corp.	108, 109
Conover-Mast Purchasing Directory	167
Continental Can Company	25
Continental Diamond Fibre, Div. of the Budd Co., Inc.	120, 121
Cope Division, T. J. Rome Cable Corporation	114
Cords Limited Div., Essex Wire Corp.	42
Crucible Steel Company of America 2	123

D	
Dana Corp.	127
Darnell Corp., Ltd.	106
Decatur Casting Company, The	164
Denver-Chicago Trucking Co.	125
Diston Div., Henry, H. K. Porter Company, Inc.	151
Dodge Mfg. Corp.	118, 119

E	
Elastic Stop Nut Corp. of America	14
Emerson Electric Mfg. Co.	3rd Cover
Emery Air Freight Corp.	138, 139
Essex Wire Corp., R-B-M "Control" Div., Wire & Cable Div., Cords Limited Div.	49
Esterbrook Pen Co., The	146

F	
Fafnir Bearings Co.	4
Federal-Mogul Division Federal-Mogul-Bower Bearings, Inc.	49
Fort Howard Paper Co.	16

G	
Gates Rubber Company	27
Gaylord Container Corporation	
Division of Croton Zellerbach Corp.	173
General Electric Company	112, 113
Goodrich Industrial Products Company, R. F.	3

H	
Harter Corporation	148
Horsburgh & Scott Co.	140
Hussey & Co., C. G.	65

I	
Industrial Tape Corp.	105
Inland Container Corp.	20
International Business Machines International Paper Co., Fine Paper Division	149
Interstate Motor Freight System	145
I-T-E Circuit Breaker Co.	116, 117

J	
Jomac, Inc.	110
Jones & Laughlin Steel Corp.	34, 35
Cold Finished Bar Products	171
Stainless Strip Division	171

K	
Koh-I-Noor Pencil Company, Inc.	144

L	
Linde Company, Division of Union Carbide Corporation	30
Lunkenheimer Company	69
Lustra Corporation	69

M	
Marathon Division of American Can Company	158
Marsh Corp., Jas. P.	159
Mead Corporation, The	101
Meehanite Metal Corp.	154, 155
Mirco Aluminum Co.	28, 29
Moore Business Forms	143
Morse Twist Drill & Machine Co.	18, 19

N	
National Cash Register Co.	147
National Machine Products Company	169
National Supply Co., Spang-Chalfant Division	21
New Departure Division of General Motors	8
Norton Company	128, 129

O	
Olin Mathieson Chemical Corp. (Western Brass)	111
Osborn Mfg. Co.	48

P	
Page Fence Assoc.	158
Parker-Kalon Division General Amer. Trans. Corp.	50, 51
Penrold Division of Brush Beryllium Co., The	122
Perfection Gear Co. Amer. Stock Gear Division	132
Permacel-LePage's Inc.	105
Phoenix Mfg. Co., Flange & Forging Division	157
Pittsburgh Plate Glass Co., Brush Division	168
Pittsburgh Screw & Bolt Corp.	64
Polysken Products Division of Kendall Co.	57
Powell Valves	12

R	
R-B-M "Control" Div., Essex Wire Corp.	42
Remington Arms Co., Inc.	162
Republic Steel Corporation	134, 135
Revere Copper & Brass, Inc.	44, 45
Riegel Paper Corporation	10
Rohm & Haas Company	133
Rome Cable Corp., T. J. Cope Division	114
Ryerson & Son, Inc. Joseph T.	72

S	
Saginaw Steering Gear Division General Motors Company	31
Schrader's Son, A.	46
Scott Paper Company	97
Shell Chemical Corp.	2nd Cover
Simonds Abrasive Company	59
SKF Industries, Inc.	1
Spang-Chalfant Div., National Supply Company	21
Standard Pressed Steel Company	26
Standard Steel Works Div.; Baldwin-Lima-Hamilton	67
Stanscrew Fasteners	32
Steward Warner Corp. Alemite Dept.	115
Sun Shipbuilding & Dry Dock Company	166
Superior Steel Division, Copperweld Steel Company	141

T	
Taylor Chain Co., S. G.	52
Texas Company	70
Thermold Division, H. K. Porter Company, Inc.	104
Thomson Co., Judson L.	165
Timken Roller Bearing Co., Industrial Div.	68
Tomkins Johnson Co.	126
Trent Tube Company	2
Tubular Rivet & Stud Co.	163

U	
Uddeholm Co. of America, Inc.	62
Union Bag-Camp Paper Corporation	160, 161

V	
Valley Electric Corp.	166
Vascoloy-Ramet Corporation	4th Cover
Veeder-Root, Inc.	124

W	
Weirton Steel Company	107
Westinghouse Electric Corp.	
Lamp Division	60
Wickwire Spencer Steel Div. of the Colorado Fuel & Iron Corp.	108, 109
Williams & Co., J. H.	22
Wire & Cable Div., Essex Wire Corp.	42
World Bestos	156

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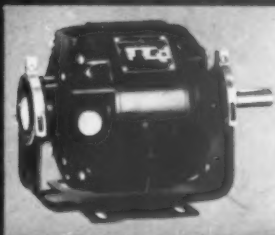
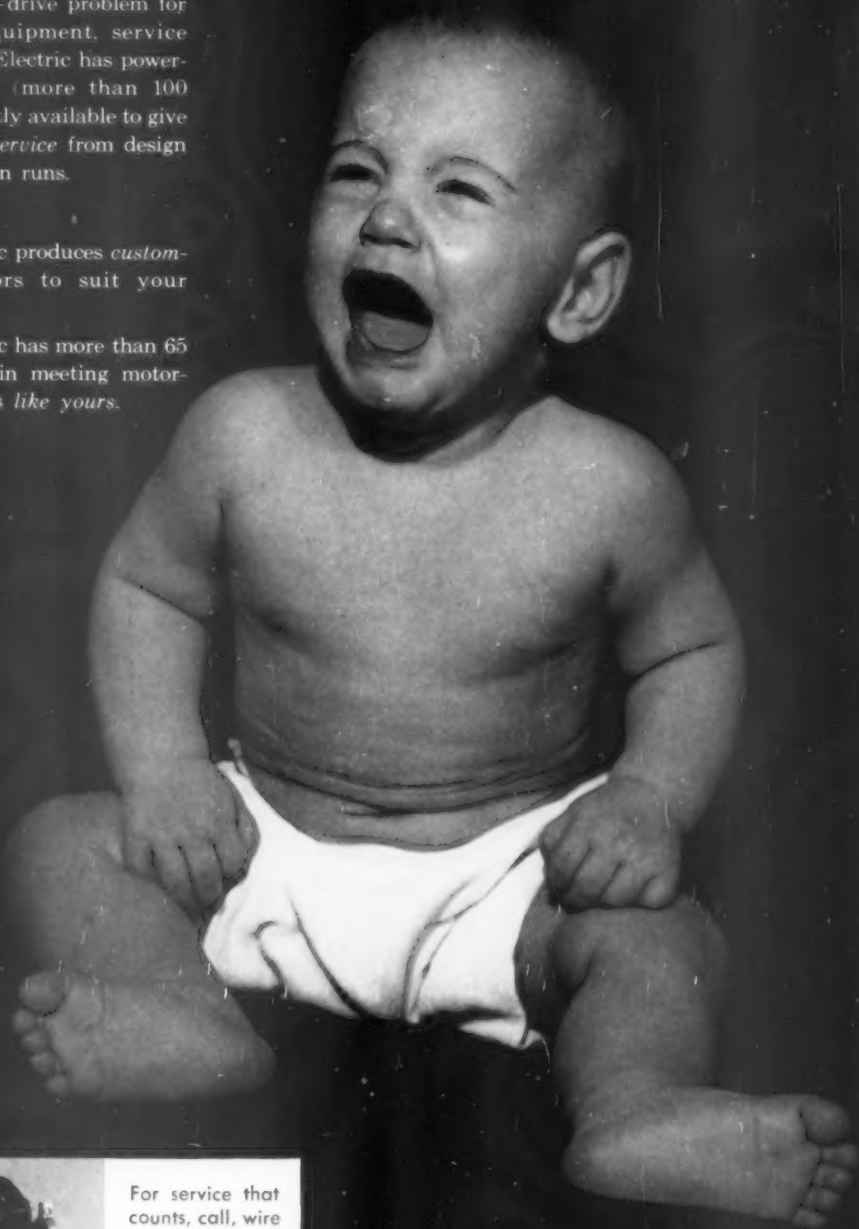
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